

Table 3**Page 3 of 4****Ft. Wainwright Family Housing Revitalization
Method 6010A - Lead
January, 2001**

		QC Dup	QA Dup	
LOCATION OF SAMPLE:	AP-7927	AP-7927	AP-7927	AP-7930
DATE OF SAMPLE:	1/24/01	1/24/01	1/24/01	1/25/01
TYPE OF SAMPLE:	Soil	Soil	Soil	Soil
DEPTH OF SAMPLE:(FEET)	4" - 6"	4" - 6"	4" - 6"	4.5
FIELD SAMPLE ID: 01FWHR-	11SL	12SL	13SL	18SL
TESTING LABORATORY:	LTL	LTL	CTE	LTL
LABORATORY SAMPLE ID:	0101532-08	0101532-09	1010040003	0101597-01
DATE RECEIVED:	1/26/01	1/26/01	1/26/01	1/31/01
DATE ANALYZED:	2/5/01	2/5/01	2/6/01	2/15/01
CONCENTRATION UNITS:	mg/kg	mg/kg	mg/kg	mg/kg
Lead	8.3 J	110 J	9.69 J	197

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LTL: Laucks Testing Laboratories, Seattle, WA.

CT&E: CT&E Environmental Services, Anchorage, AK.

J: Estimated Value.

ND: Not Detected. (The number in parentheses is the Method Reporting Limit (MRL)).

Table 3

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**Ft. Wainwright Family Housing Revitalization
Method 6010A - Lead
January, 2001**

LOCATION OF SAMPLE:	AP-7937	AP-7942
DATE OF SAMPLE:	1/27/01	1/29/01
TYPE OF SAMPLE:	Soil	Soil
DEPTH OF SAMPLE:	4" - 6"	4" - 6"
FIELD SAMPLE ID: 01FWHR-	19SL	20SL
TESTING LABORATORY:	LTL	LTL
LABORATORY SAMPLE ID:	0101597-02	0101597-03
DATE RECEIVED:	1/31/01	1/31/01
DATE ANALYZED:	2/13/01	2/13/01
CONCENTRATION UNITS:	mg/kg	mg/kg
Lead	9	27

Appendix D

Chemical Data Quality Report

CHEMICAL DATA QUALITY REVIEW

FTW230 Family Housing Revitalization

Soil Sampling

Project #

00-014

Received: 2/17/01

Prepared for

Army Corps of Engineers - Alaska Division

1.0 Introduction

This report summarizes the technical review of analytical results generated in support of the Family Housing Revitalization at Fort Wainwright, Alaska. The criteria applied for this review are consistent with analytical method protocols, in conjunction with the laboratory-established control limits. In cases where specific guidance was not available from either of these sources, the data have been evaluated using professional judgement consistent with industry standards. The review included evaluation of sample collection, holding time and summary information for blanks (to assess contamination), sample duplicates (to assess precision), laboratory control samples (to assess accuracy) and matrix spike and surrogate recoveries (to assess matrix effect). Instrument calibration review and raw data verification were not performed.

The report is arranged by method; within each method section is a sub-section addressing each data quality indicator. In situations where all applicable criteria were met, it will be stated. If criteria were not met, the non-compliance, qualifier and associated samples are listed. Appendices A and B list qualifier definitions and acronyms, respectively. Appendix C, the data summary table, displays all sample results, as well as qualifiers and descriptors that may apply. Appendix D includes a summary of all qualified data, by analytical method.

I certify that all data validation criteria described above were assessed, and any qualifications made to the data were in accordance with the cited reference documents.



Authorized Signature (209) 576-2621

2.0 Sample Collection, Preservation and Handling

Samples were collected from January 19 through January 30, 2001. Samples were received by Laucks Testing Laboratory (Primary Laboratory) in Seattle, Washington and CT and E Environmental Services, Inc. (Referee Laboratory) in Anchorage, Alaska within one to seven days of collection. The following samples were collected and analyzed by all applicable methods:

Laboratory: LTL (Primary Laboratory)

Project / Lab ID	Field ID	Field QC ID	Matrix	Date Collected	Temp C		Q ¹	Bias	RC
					Temp Blank	Cooler			
Date Rec'd by Lab: 1/26/01									
FHR01									
BTEX									
0101532-01	01FWHR01SL	Primary Sample	SO	1/19/01	0.9	1.8	none*		
0101532-02	01FWHR02SL	QC Dup of 01FWHR01SL	SO	1/19/01	0.9	1.8	none*		
0101532-06	01FWHR08SL		SO	1/23/01	0.9	1.8	none*		
0101532-07	01FWHR09SL	Trip Blank	SO	1/23/01	0.9	1.8	none*		
0101532-08	01FWHR11SL	Primary Sample	SO	1/24/01	0.9	1.8	none*		
0101532-09	01FWHR12SL	QC Dup of 01FWHR11SL	SO	1/24/01	0.9	1.8	none*		
Diesel/Residual Range Organics									
0101532-01	01FWHR01SL	Primary Sample	SO	1/19/01	0.9	1.8	none*		
0101532-02	01FWHR02SL	QC Dup of 01FWHR01SL	SO	1/19/01	0.9	1.8	none*		
0101532-06	01FWHR08SL		SO	1/23/01	0.9	1.8	none*		
0101532-08	01FWHR11SL	Primary Sample	SO	1/24/01	0.9	1.8	none*		
0101532-09	01FWHR12SL	QC Dup of 01FWHR11SL	SO	1/24/01	0.9	1.8	none*		
Gasoline Range Organics									
0101532-01	01FWHR01SL	Primary Sample	SO	1/19/01	0.9	1.8	none*		
0101532-02	01FWHR02SL	QC Dup of 01FWHR01SL	SO	1/19/01	0.9	1.8	none*		
0101532-06	01FWHR08SL		SO	1/23/01	0.9	1.8	none*		
0101532-07	01FWHR09SL	Trip Blank	SO	1/23/01	0.9	1.8	none*		
0101532-08	01FWHR11SL	Primary Sample	SO	1/24/01	0.9	1.8	none*		
0101532-09	01FWHR12SL	QC Dup of 01FWHR11SL	SO	1/24/01	0.9	1.8	none*		
Organochlorine Pesticides									
0101532-03	01FWHR04SL		SO	1/20/01	0.9	1.8	none*		
0101532-04	01FWHR06SL		SO	1/21/01	0.9	1.8	none*		
0101532-04DL	01FWHR06SL		SO	1/21/01	0.9	1.8	none*		
0101532-05	01FWHR07SL		SO	1/23/01	0.9	1.8	none*		
0101532-05DL	01FWHR07SL		SO	1/23/01	0.9	1.8	none*		
0101532-10	01FWHR15SL	Primary Sample	SO	1/24/01	0.9	1.8	none*		
0101532-10DL	01FWHR15SL		SO	1/24/01	0.9	1.8	none*		
0101532-11	01FWHR16SL	QC Dup of 01FWHR15SL	SO	1/24/01	0.9	1.8	none*		

FY01 REPLACEMENT FAMILY HOUSING

FTW230

Laboratory: LTL (Primary Laboratory)

Project / Lab ID	Field ID	Field QC ID	Matrix	Date Collected	Temp C		Q ¹	Bias	RC
					Temp Blank	Cooler			
FHR01									
0101532-11DL	01FWHR16SL		SO	1/24/01	0.9	1.8	none*		
Total Metals									
0101532-01	01FWHR01SL	Primary Sample	SO	1/19/01	0.9	1.8	none*		
0101532-02	01FWHR02SL	QC Dup of 01FWHR01SL	SO	1/19/01	0.9	1.8	none*		
0101532-06	01FWHR08SL		SO	1/23/01	0.9	1.8	none*		
0101532-08	01FWHR11SL	Primary Sample	SO	1/24/01	0.9	1.8	none*		
0101532-09	01FWHR12SL	QC Dup of 01FWHR11SL	SO	1/24/01	0.9	1.8	none*		
0101532-10	01FWHR15SL	Primary Sample	SO	1/24/01	0.9	1.8	none*		
0101532-11	01FWHR16SL	QC Dup of 01FWHR15SL	SO	1/24/01	0.9	1.8	none*		
Date Rec'd by Lab: 1/31/01									
FHR02									
BTEX									
0101597-01	01FWHR18SL		SO	1/25/01	6.7	NR	J/UJ	L	t
0101597-04	01FWHR21SL	Trip Blank	SO	1/30/01	6.7	NR	J/UJ	L	t
Diesel/Residual Range Organics									
0101597-01	01FWHR18SL		SO	1/25/01	6.7	NR	J/UJ	L	t
0101597-01RE	01FWHR18SL		SO	1/25/01	6.7	NR	J/UJ	L	t
Gasoline Range Organics									
0101597-01	01FWHR18SL		SO	1/25/01	6.7	NR	J/UJ	L	t
0101597-04	01FWHR21SL	Trip Blank	SO	1/30/01	6.7	NR	J/UJ	L	t
Organochlorine Pesticides									
0101597-02	01FWHR19SL		SO	1/27/01	6.7	NR	J/UJ	L	t
0101597-03	01FWHR20SL		SO	1/29/01	6.7	NR	J/UJ	L	t
0101597-03DL	01FWHR20SL		SO	1/29/01	6.7	NR	J/UJ	L	t
Total Metals									
0101597-01	01FWHR18SL		SO	1/25/01	6.7	NR	J/UJ	L	t
0101597-02	01FWHR19SL		SO	1/27/01	6.7	NR	J/UJ	L	t
0101597-03	01FWHR20SL		SO	1/29/01	6.7	NR	J/UJ	L	t

Laboratory: CTE

Project / Lab ID	Field ID	Field QC ID	Matrix	Date Collected	Temp C		Q ¹	Bias	RC
					Temp Blank	Cooler			
Date Rec'd by Lab: 1/26/01									
1010040									
Diesel/Residual Range Organics									
1010040001	01FWHR03SL A	QA Dup of 01FWHR01SL	SO	1/19/01	3.4	2.1	none		
1010040003	01FWHR13SL A	QA Dup of 01FWHR11SL	SO	1/24/01	3.4	2.1	none		
Gasoline Range Organics / BTEX									
1010040001	01FWHR03SL A	QA Dup of 01FWHR01SL	SO	1/19/01	3.4	2.1	none		
1010040002	01FWHR10SL	Trip Blank	SO	1/23/01	3.4	2.1	none		
1010040003	01FWHR13SL A	QA Dup of 01FWHR11SL	SO	1/24/01	3.4	2.1	none		
Organochlorine Pesticides									
1010040004	01FWHR17SL A	QA Dup of 01FWHR15SL	SO	1/24/01	3.4	2.1	none		
Total Metals									
1010040001	01FWHR03SL A	QA Dup of 01FWHR01SL	SO	1/19/01	3.4	2.1	none		
1010040003	01FWHR13SL A	QA Dup of 01FWHR11SL	SO	1/24/01	3.4	2.1	none		
1010040004	01FWHR17SL A	QA Dup of 01FWHR15SL	SO	1/24/01	3.4	2.1	none		

NR = Not Reported

¹ If both a temperature blank and cooler temperature are recorded, the temperature blank will be considered most valid; if there is a significant discrepancy between the cooler temperature and the temperature blank, (> 5 C), the most extreme temperature will be used to qualify data for all associated samples - if the temperature is > 6 C, for all target analytes except metals and soil AK101, flag all associated detected and non-detected results as estimated (J/UJ); for metals in water matrix only, if the temperature is < 2 C, flag all associated detected and non-detected results as estimated (J/UJ)

* Although sample temperature was < 2 C, no action was taken other than to note the low temperature

All sampling and sample receipt documentation were present and reviewed. No problems or discrepancies were observed.

3.0 Gasoline Range Organics (AK101)

Eight soil samples and three methanol trip blanks were analyzed by this method. All samples were prepared and analyzed by method AK101.

3.1 Holding Time

All samples were analyzed within the required technical holding time.

3.2 Surrogates

All surrogate recoveries were within the required limits except the following:

Laboratory: CTE

Lab ID	Field ID	Matrix	Dil		% Rec	Recovery Limits	Q ²	Bias	RC
			Factor	Surrogate					
1010040001	01FWHR03SL	SO	1.44	4-bromofluorobenzene	5.2	50 - 150	J/UR	L	b

Laboratory: LTL

Lab ID	Field ID	Matrix	Dil		% Rec	Recovery Limits	Q ²	Bias	RC
			Factor	Surrogate					
0101532-01	01FWHR01SL	SO	1	4-bromofluorobenzene	11	50 - 150	J/UJ	L	b
0101532-02	01FWHR02SL	SO	1	4-bromofluorobenzene	11	50 - 150	J/UJ	L	b
0101597-01	01FWHR18SL	SO	1	4-bromofluorobenzene	36	50 - 150	J/UJ	L	b

¹ Laboratory-established limits

² According to the Functional Guidelines for Organic Data Review, if the surrogate recovery is > UCL, flag detected results J; if the surrogate recovery is < LCL, flag detected results J and non-detects UJ; if the surrogate recovery is less than 10%, flag detected results J and non-detects UR

3.3 Blanks

Method blanks were analyzed at the minimum required frequency. Gasoline range organics were reported as non-detected in all cases.

Three trip blanks were collected for analysis by this method. Gasoline range organics were reported as nondetected in all cases.

3.4 Matrix Spike/Matrix Spike Duplicates

MS/MSDs were analyzed at the required frequency. All recoveries and RPDs were within the required limits.

3.5 Laboratory Control Samples

Laboratory control samples were analyzed at the required frequency. All recoveries and RPDs were within the required limits.

3.6 Quantitation Limits

The practical quantitation limits (PQLs) achieved by the laboratories were acceptable relative to the estimated quantitation limits (EQL) suggested by this method for soil matrix samples. All detected results reported were above the quantitation limit.

3.7 Overall Assessment

Due to low surrogate recovery, the gasoline range organics result for sample 01FWHR03SL AP-1 is rejected. Rejected data are unuseable for any purpose.

Due to low surrogate recovery, gasoline range organics results for three samples are qualified as estimated. Estimated data are useable for limited purposes. All qualified data was due to matrix problems; results for these samples may be biased low.

Minor data quality deficiencies were found, which had a slight impact to data useability. All data generated by this method, except where noted, should be considered useable as reported.

4.0 Diesel Range Organics (AK102)

Nine soil samples were analyzed for diesel range organics. The primary laboratory (LTL) prepared samples by method SW3515; the QA laboratory (CTE) prepared samples by method SW3550B. Both laboratories analyzed samples by method AK102.

4.1 Holding Time

All samples were prepared and analyzed within the required technical holding time except the following:

Laboratory: LTL

Field ID	Sample ID	Matrix	Collected	Prepared	Analyzed	Holding Time (Days)		RTHT ¹ (Days)		Q ²	Bias	RC
						Prep / Analysis	Prep / Analysis	Prep / Analysis	Prep / Analysis			
01FWHR18SL	0101597-01RE	SO	1/25/01	2/9/01	2/14/01	15	5	14	40	J/UJ	L	e

¹ Required technical holding time established for the method

² According to the Functional Guidelines for data review, if prep or analysis holding time is exceeded, flag detected results J and nondetects UJ

4.2 Surrogates

All surrogate recoveries were within the required limits except the following:

Laboratory: LTL

Lab ID	Field ID	Matrix	Dil Factor	Surrogate	% Rec	Recovery ¹ Limits		Q ²	Bias	RC
0101597-01	01FWHR18SL	SO	5	p-terphenyl	363	50 - 150	J/none	H		b
0101597-01RE	01FWHR18SL	SO	5	p-terphenyl	337	50 - 150	J/none	H		b

¹ Laboratory-established limits

² According to the Functional Guidelines for Organic Data Review, if the surrogate recovery is > UCL, flag detected results J; if the surrogate recovery is < LCL, flag detected results J and non-detects UJ; if the surrogate recovery is less than 10%, flag detected results J and non-detects UR

* qualifiers do not apply if the sample was diluted by >5 times and the recovery is <LCL

4.3 Blanks

Method blanks were analyzed at the minimum required frequency. Diesel range organics were reported as non-detected except the following:

Labcode: CTE
SDG: 1010040
MB Batch ID: 8144XXX
Matrix: SO

Analyte	Result	PQL	Units
diesel range organics	3.6	10	MG/KG

No sample results were affected by the above blank contamination

Labcode: CTE
SDG: 1010040
MB Batch ID: 8152XXX
Matrix: SO

Analyte	Result	PQL	Units
diesel range organics	3.3	10	MG/KG

No sample results were affected by the above blank contamination

¹

According to the National Functional Guidelines for Organic Data Review, any compound detected in a blank that was also detected in an associated sample is qualified if the sample result is less than 10x the blank concentration for common laboratory contaminants, or 5x for all other analytes. Flagging for this project is modified to "B" at the amount found in the sample

Field blanks were not collected for analysis by this method.

4.4 Matrix Spike/Matrix Spike Duplicates

MS/MSDs were analyzed at the required frequency. Recoveries and RPDs were within the required limits.

4.5 Laboratory Control Samples

Laboratory control samples were analyzed at the required frequency. All recoveries and RPDs were within the required limits except the following:

Laboratory: LTL
 LCS Batch ID: AK020101
 Prep Date: 2/1/01
 Matrix: SO

Analyte	Limits ¹					Q ²	Bias	RC
	LCS	LCSD	RPD	% Rec	RPD			
diesel range organics	66.5	81.5	20	75 - 125	50	J/UR	L	d

Associated

Samples: 01FWHR18SL (0101597-01)

¹

Laboratory-established Limits

²

For specific analytes in all samples associated with the preparation batch - if the LCS recovery is > UCL apply J to all detected results; if the LCS recovery is < LCL apply J to all detected results, apply UR to all non-detects; if the RPD is > UCL, apply J to all detected results, apply UJ to all nondetects (qualifiers do not apply to surrogate analytes)

4.6 Quantitation Limits

The practical quantitation limits (PQLs) achieved by the laboratories were acceptable relative to the estimated quantitation limits (EQL) suggested by this method for (aqueous and/or soil) samples. All detected results reported were above the quantitation limit.

4.7 Overall Assessment

Due to high sample temperature and high surrogate recovery, diesel range organics results for sample 01FWHR18SL and its reanalysis are qualified as estimated; in addition, the diesel range organics result for the reanalysis of this sample is qualified as estimated due to holding time exceedance. Due to low laboratory control sample recovery, the diesel range organics result for one sample is qualified as estimated. Estimated data are useable for limited purposes.

Sample 01FWHR18SL was reanalyzed due to high surrogate recovery and low laboratory control sample recovery in the original analysis. Reanalysis yielded similar surrogate recovery, and improved laboratory control sample recovery; however, the results from the original analysis should be used as the final validated result due to the reanalysis exceeding holding time.

Minor data quality deficiencies were found, which had a slight impact to data useability. All data generated by this method, except where noted, should be considered useable as reported.

5.0 Residual Range Organics (AK103)

Nine soil samples were analyzed for residual range organics. The primary laboratory (LTL) prepared samples by method SW3515; the QA laboratory (CTE) prepared samples by method SW3550B. Both laboratories analyzed samples by method AK103.

5.1 Holding Time

All samples were prepared and analyzed within the required technical holding time except the following:

Laboratory: LTL

Field ID	Sample ID	Matrix	Collected	Prepared	Analyzed	Holding Time (Days)		RTHT (Days)		Q ²	Bias	RC
						Prep / Analysis		Prep / Analysis				
01FWHR18SL	0101597-01RE	SO	1/25/01	2/9/01	2/14/01	15	5	14	40	J/UJ	L	e

¹ Required technical holding time established for the method

² According to the Functional Guidelines for data review, if prep or analysis holding time is exceeded, flag detected results J and nondetects UJ

5.2 Surrogates

All surrogate recoveries were within the required limits except the following:

Laboratory: LTL

Lab ID	Field ID	Matrix	Dil Factor	Surrogate	% Rec	Recovery Limits		Q ²	Bias	RC
0101597-01	01FWHR18SL	SO	5	p-terphenyl	363	50 - 150	J/none	H		b
0101597-01RE	01FWHR18SL	SO	5	p-terphenyl	337	50 - 150	J/none	H		b

¹ Laboratory-established limits

² According to the Functional Guidelines for Organic Data Review, if the surrogate recovery is > UCL, flag detected results J; if the surrogate recovery is < LCL, flag detected results J and non-detects UJ; if the surrogate recovery is less than 10%, flag detected results J and non-detects UR

* qualifiers do not apply if the sample was diluted by >5 times and the recovery is <LCL

5.3 Blanks

Method blanks were analyzed at the minimum required frequency. Residual range organics were reported as non-detected in all cases.

Field blanks were not collected for analysis by this method.

5.4 Matrix Spike/Matrix Spike Duplicates

MS/MSDs were analyzed at the required frequency; however, LTL (Primary Laboratory) did not spike with residual range organics, only diesel range organics. For MS/MSDs analyzed by CT & E (Referee Laboratory), recoveries and RPDs were within the required limits.

5.5 Laboratory Control Samples

Laboratory control samples were analyzed at the required frequency; however, LTL (Primary Laboratory) did not spike with residual range organics, only diesel range organics. For LCS/LCSDs analyzed by CT&E (Referee Laboratory), all recoveries and RPDs were within the required limits.

5.6 Quantitation Limits

The practical quantitation limits (PQLs) achieved by the laboratories were (were not) acceptable relative to the estimated quantitation limits (EQL) suggested by this method for (aqueous and/or soil) samples. All detected results reported were above the quantitation limit.

5.7 Overall Assessment

Due to high sample temperature and high surrogate recovery, residual range organics results for sample 01FWHR18SL and its reanalysis are qualified as estimated; in addition, the residual range organics results for the reanalysis of this sample is qualified as estimated due to holding time exceedance. Estimated data are useable for limited purposes.

Sample 01FWHR18SL was reanalyzed due to high surrogate recoveries in the original analysis. Reanalysis yielded similar results. The original result should be used as the final validated result due to fewer qualifications to the data.

Minor data quality deficiencies were found, which had a slight impact to data useability. All data generated by this method, except where noted, should be considered useable as reported.

6.0 Volatile Aromatic Hydrocarbons (SW8021)

Eight soil samples and three methanol trip blanks were analyzed by this method. The primary laboratory (LTL) prepared samples by method SW5035, and analyzed samples by method SW8021. The referee laboratory (CTE) prepared and analyzed samples by method AK101, not SW8021B as requested on the chain-of-custody.

6.1 Holding Time

All samples were analyzed within the required technical holding time.

6.2 Surrogates

All surrogate recoveries were within the required limits except the following:

Laboratory: CTE

Lab ID	Field ID	Matrix	Dil Factor	Surrogate	% Rec	Recovery Limits ¹	Q ²	Bias	RC
1010040001	01FWHR03SL	SO	1.44	4-bromofluorobenzene	5.2	50 - 150	J/UR	L	b

Laboratory: LTL

Lab ID	Field ID	Matrix	Dil Factor	Surrogate	% Rec	Recovery Limits ¹	Q ²	Bias	RC
0101532-01	01FWHR01SL	SO	1	4-bromofluorobenzene	8	49 - 128	J/UR	L	b
0101532-02	01FWHR02SL	SO	1	4-bromofluorobenzene	10	49 - 128	J/UJ	L	b
0101597-01	01FWHR18SL	SO	1	4-bromofluorobenzene	30	49 - 128	J/UJ	L	b

¹ Laboratory-established limits

² According to the Functional Guidelines for Organic Data Review, if the surrogate recovery is > UCL, flag detected results J; if the surrogate recovery is < LCL, flag detected results J and non-detects UJ; if the surrogate recovery is less than 10%, flag detected results J and non-detects UR

6.3 Blanks

Method blanks were analyzed at the minimum required frequency. All target compounds were reported as non-detected except the following:

Labcode: CTE
SDG: 1010040
MB Batch ID: 7358VXX
Matrix: SO

Analyte	Result	PQL	Units
o-xylene	0.026	0.05	MG/KG

No sample results were affected by the above blank contamination

¹

According to the National Functional Guidelines for Organic Data Review, any compound detected in a blank that was also detected in an associated sample is qualified if the sample result is less than 10x the blank concentration for common laboratory contaminants, or 5x for all other analytes. Flagging for this project is modified to "B" at the amount found in the sample

Three trip blanks were collected for analysis by this method. All target compounds were reported as nondetected in all cases.

6.4 Matrix Spike/Matrix Spike Duplicates

MS/MSDs were analyzed at the required frequency. All recoveries and RPDs were within the required limits.

6.5 Laboratory Control Samples

Laboratory control samples were analyzed at the required frequency. All recoveries and RPDs were within the required limits.

6.6 Quantitation Limits

The practical quantitation limits (PQLs) achieved by the laboratories were acceptable relative to the estimated quantitation limits (EQL) suggested by this method for soil matrix samples. All detected results reported were above the quantitation limit.

6.7 Overall Assessment

Due to low surrogate recovery, results for all target compounds in sample 01FWHR01SL are rejected. Rejected data are unuseable for any purpose.

Due to elevated sample temperature, results for all target compounds in two samples are qualified as estimated. Due to low surrogate recovery, results for all target compounds in three samples are qualified as estimated. Estimated data are useable for limited purposes. Detected and nondetected results may be biased low.

Minor data quality deficiencies were found, which had a significant impact to data useability (16% of data were rejected). All data generated by this method, except where noted, should be considered useable as reported.

7.0 Organochlorine Pesticides by GC/ECD (SW8081)

Thirteen soil samples were analyzed by this method. The primary laboratory (LTL) prepared samples by method SW3545; the referee laboratory (CTE) prepared samples by method SW3550B. Both the primary and referee laboratories analyzed samples by method SW8081A.

7.1 Holding Time

All samples were prepared and analyzed within the required technical holding time.

7.2 Surrogates

All surrogate recoveries were within the required limits.

7.3 Blanks

Method blanks were analyzed at the minimum required frequency. All target compounds were reported as non-detected.

Field blanks were not collected for analysis by this method.

7.4 Matrix Spike/Matrix Spike Duplicates

MS/MSDs were analyzed at the required frequency. All recoveries and RPDs were within the required limits except the following:

Laboratory: CTE
Prep Date: 1/30/01
Prep Batch ID: 8145XXX
Spiked Sample: 01FWHR17SL AP-11
Matrix: SO
Dil Factor: 1.33

ANALYTE	Sample Result mg/Kg	Spike Conc. mg/Kg	% Recovery		Limits ¹	MS/MSD RPD	Limit ¹	Q ²	Bias	RC
			MS	MSD						
4,4'-DDT	0.1		467	156	50 - 139	100.1	30	J/UJ	N	c,f
4,4'-DDE	0.07		99.2	180	47 - 140	57.6	30	J/UJ	N	c,f
methoxychlor	<1.003		150	207	53 - 159	32	30	J/UJ	N	c,f
endrin	<1.003		87.5	64.3	58 - 147	30.6	30	J/UJ	N	f
alpha-chlordane	<1.003		55.4	48.2	50 - 143	13.8	30	J/UJ	L	c

Associated

Samples: 01FWHR17SL (1010040004)

¹ Limits established by the laboratory

² If the MS or MSD recovery is < LCL apply J to all positive results, apply UJ to all non-detects; if the MS or MSD recovery is > UCL apply J to all positive results; if the MS/MSD RPD is > UCL apply J to all positive results, apply UJ to all non-detects. For this review, qualifiers will apply to the spiked sample only

7.5 Laboratory Control Samples

Laboratory control samples were analyzed at the required frequency. All recoveries and RPDs were within the required limits.

7.6 Quantitation Limits

The practical quantitation limits (PQLs) achieved by the laboratories were acceptable relative to the estimated quantitation limits (EQL) suggested by this method for soil matrix samples. All detected results reported were above the quantitation limit.

7.7 Overall Assessment

Due to elevated sample temperature, results for all target compounds in two samples and one diluted analysis are qualified as estimated. Due to poor matrix spike accuracy and/or precision, results for 4,4'-DDE, 4,4'-DDT, methoxychlor, endrin and alpha-chlordane in one sample and one diluted analysis are qualified as estimated. Due to calibration range exceedance, 4,4'-DDE and 4,4'-DDT results from the original analysis of samples 01FWHR06SL, 01FWHR15SL and 01FWHR16SL and 4,4'-DDT results from the original analysis of sample 01FWHR07SL are qualified as estimated. Estimated data are useable for limited purposes.

Samples 01FWHR06SL, 01FWHR07SL, 01FWHR15SL and 01FWHR16SL were reanalyzed at a dilution, due to calibration range exceedance for certain target compounds. For samples 01FWHR06SL, 01FWHR15SL and 01FWHR16SL, 4,4'-DDE and 4,4'-DDT results should be used from the diluted analysis; for sample 01FWHR07SL, 4,4'-DDT results should be used from the diluted analysis. Results and reporting limits for all other compounds should be used from the original analysis.

Minor data quality deficiencies were found, which had a significant impact to data useability (25% of data were qualified). All data generated by this method, except where noted, should be considered useable as reported.

8.0 Total Metals (SW6010, SW6020 and SW7471)

Twelve soil samples were analyzed for total lead; one soil sample was analyzed for arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver. Both laboratories prepared samples by the required methods; however, the primary laboratory (LTL) analyzed lead by method SW6010B and the referee laboratory (CTE) analyzed lead by method SW6020.

8.1 Holding Time

All samples were analyzed within the required technical holding time.

8.2 Blanks

Method blanks were analyzed at the minimum required frequency. All were reported as non-detected except the following:

Labcode: LTL
SDG: FHR01
MB Batch ID: 61020201
Matrix: SQ

Analyte	Result	PQL	Units
barium	0.1	0.05	MG/KG
lead	0.2	0.16	MG/KG

No sample results were affected by the above blank contamination

¹ According to the National Functional Guidelines for Inorganic Data Review, any target analyte detected in a blank that was also detected in an associated sample is qualified if the sample result is less than 5x the blank concentration. Flagging for this project is modified to "B" at the amount found in the sample

Field blanks were not collected for metals analysis.

8.3 Matrix Spike/Sample Duplicates

MS/SDs were analyzed at the required frequency. Recoveries and RPDs were within the required limits except the following:

Laboratory: LTL
Prep Date: 2/2/01
Prep Batch ID: 61020201
Spiked Sample: 01FWHR18SL
Matrix: SO
Dil Factor: 1

ANALYTE	Sample Result mg/Kg	Spike Conc. mg/Kg	% Recovery		Limits ¹	MS/MSD RPD	Limit ¹	Q ²
			MS	MSD				
lead	197	44.3	618	NA	75 - 125	NA	20	NA - >4X
barium	1240	178.6	133	NA	75 - 125	NA	20	NA - >4X

Associated
Samples: 01FWHR18SL

¹
Laboratory-established limits

²
If the MS or MSD recovery is < LCL apply J to all detected results, apply UJ to all non-detects; if the MS or MSD recovery is > UCL apply J to all detected results; if the MS/MSD RPD is > UCL apply J to all detected results, apply UJ to all non-detects. If the sample concentration is > 4X the spike value, guidelines do not apply

8.4 Laboratory Control Samples

Laboratory control samples were analyzed at the required frequency. All recoveries and RPDs were within the required limits.

8.5 Serial Dilution

A serial dilution was performed by LTL (Primary Laboratory). Precision was acceptable for all target analytes except the following:

Laboratory: LTL
Sample ID: 01FWHR18SL
Prep Date: 2/2/01
Matrix: SO

Analyte	Original Result	SD Result	RPD	RPD Limit	Q ¹	Bias	RC
barium	14146	16207	14.6	10%	J	N	g
chromium	696.9	775	11.2	10%	J	N	g

Associated Samples: 01FWHR18SL

¹ According to the Functional Guidelines, if the %D for any analyte is >10% and the diluted sample result is >10X the MDL, flag detected results for all batch samples as estimated (J)

8.6 Quantitation Limits

The practical quantitation limits (PQLs) achieved by the laboratories were acceptable relative to the estimated quantitation limits (EQL) suggested by these methods for soil samples. All detected results reported were above the quantitation limit.

8.7 Overall Assessment

Due to poor serial dilution precision, barium and chromium results for one sample are qualified as estimated. Due to poor field duplicate precision, lead results for three samples are qualified as estimated.

Minor data quality deficiencies were found, which had a significant impact to data useability. All qualified data (25% of all data) were qualified due to matrix problems. All data generated by these methods, except where noted, should be considered useable as reported.

9.0 Field Duplicates

Three sets of QA/QC duplicates were collected for analysis by all applicable methods. All results reported by the primary and referee laboratories were in agreement except the following:

	<u>Primary</u>		<u>QC Dup</u>		<u>QA Dup</u>					
Project ID:	FHR01		FHR01		1010040					
Field ID:	01FWHR11SL		01FWHR12SL		01FWHR13SL AP-12					
Analysis Method:	SW6010B		SW6010B		SW6020					
Units:	mg/Kg		mg/Kg		mg/Kg					
Matrix: SO										
	Result	Q	Result	Q	Result	Q	Dev	Q	Bias	RC
lead	8.3	J	110	J	9.69	J	10X	J	N	n

10.0 References

"USEPA Test Methods for Evaluating Solid Waste Physical/Chemical Methods", July 1992 (SW-846)

"Methods for Chemical Analysis of Water and Wastes", March 1983 (EPA-600)

"National Functional Guidelines for Organic Data Review", February, 1994

"National Functional Guidelines for Inorganic Data Review", February, 1994

"State of Alaska Method AK101, Determination of Gasoline Range Organics"

"State of Alaska Method AK102, Determination of Diesel Range Organics"

"State of Alaska Method AK103, Determination of Residual Range Organics"

"USACOE Chemical Quality Assurance for HTRW Projects", October 1997

Appendix A

Qualifier Definitions

B	The sample result is less than 5 or 10 times (for common laboratory contaminants) the associated blank contamination.
U	The analyte was analyzed for, but was not detected above the reported quantitation limit.
UU	The analyte was not detected above the reported quantitation limit. However, the reported quantitation is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J/none	Sample results for the analyte are estimated for positive results; results reported below the quantitation limit are not qualified (high bias).
J/UU	Sample results for the analyte are estimated for both positive results and results reported below the quantitation limit (low bias).
R/UR	The sample results are rejected for both positive results and results reported below the quantitation limit due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Appendix B

Acronyms

CRQL	-	Contract Required Quantitation Limit
CTE	-	CT & E Environmental Services, Inc.
H	-	High Bias
L	-	Low Bias
LCL	-	Lower Control Limit
LCS/LCSD	-	Laboratory Control Sample/Laboratory Control Sample Duplicate
LTL	-	Laucks Testing Laboratory
MB	-	Method Blank
MDL	-	Method Detection Limit
MS/MSD	-	Matrix Spike/Matrix Spike Duplicate
N	-	No Bias Determined
NA	-	Not Applicable
NE	-	Not Established
NR	-	Not Reported
PQL	-	Practical Quantitation Limit
Q	-	Qualifier
QA	-	Quality Assurance
QC	-	Quality Control
RPD	-	Relative Percent Difference
RRL	-	Required Reporting Limit
RSD	-	Relative Standard Deviation
RTHT	-	Required Technical Holding Time
SD	-	Sample Duplicate
SW-846	-	EPA Test Methods for Evaluating Solid Waste
SX	-	Soil
UCL	-	Upper Control Limit
WX	-	Groundwater

*Appendix C***Data Summary Table****QUALIFIER REASON CODES**

- a - The analyte was found in the method blank
- a- - Negative drift observed in instrument calibration blanks
- b - Surrogate spike recovery outside control limits
- c - Matrix Spike/Matrix Spike Duplicate (MS/MSD) recovery outside control limits
- d - Laboratory Control Sample (LCS) recovery outside control limits
- e - Holding time exceeded
- f - MS/LCS sample duplicate failed precision criteria
- h - Second column results indicate that the environmental results were not confirmed
- i - Instrument Calibration outside control limits
- k - The analyte was found in the field blank
- m - Numerical value between the MDL and PQL
- n - Field duplicate precision problem
- o - Result reported exceeds calibration range
- p - Sample was not properly collected, preserved or shipped
- s - Internal Standard outside control limits
- t - Sample temperature outside acceptance criteria

(Note: Where multiple qualifiers have been applied the first qualifier corresponds to the first reason code)

BTEx

DATA SUMMARY TABLE

Analyte	Sample ID Field ID Matrix Date Collected Units	0101532-01 01FWHR01SL SO 1/19/01 g/Kg	0101532-02 01FWHR02SL SO 1/19/01 g/Kg	0101532-06 01FWHR08SL SO 1/23/01 g/Kg	0101532-07 01FWHR09SL SO 1/23/01 g/Kg	0101532-08 01FWHR11SL SO 1/24/01 g/Kg	0101532-09 01FWHR12SL SO 1/24/01 g/Kg
		RESULT Q RC	RESULT Q RC	RESULT Q RC	RESULT Q RC	RESULT Q RC	RESULT Q RC
benzene		19 UR b	32 J b	11 U	25 U	11 U	11 U
ethylbenzene		19 UR b	25 UJ b	11 U	25 U	11 U	11 U
m,p-xylene		38 UR b	50 UJ b	23 U	50 U	23 U	22 U
o-xylene		19 UR b	25 UJ b	11 U	25 U	11 U	11 U
toluene		29 UR b	37 UJ b	17 U	38 U	17 U	17 U

FY01 REPLACEMENT FAMILY HOUSING

FTW230

Prepared by ETHIX

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FTW230 Family Housing Revitalization
SDG: FHR01

2/26/01

BTX DATA SUMMARY TABLE

Analyte	Sample ID Field ID Matrix Date Collected Units	0101597-01 01FWHR18SL SO 1/25/01 g/Kg				0101597-04 01FWHR21SL SO 1/30/01 g/Kg			
		RESULT	Q	RC		RESULT	Q	RC	
benzene		22	J	b,l		25	UJ	t	
ethylbenzene		15	UJ	b,l		25	UJ	t	
m,p-xylene		30	UJ	b,l		50	UJ	t	
o-xylene		15	UJ	b,l		25	UJ	t	
toluene		23	J	b,l		38	UJ	t	

FY01 REPLACEMENT FAMILY HOUSING

FTW230

Prepared by: ETHIX

2/26/01

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FTW230 Family Housing Remediation
SDG: 01R02

DATA SUMMARY TABLE

Diesel Residual Range Organics

Analyte	Sample ID		1010040001		1010040003	
	Field ID	Matrix	Field ID	Matrix	Field ID	Matrix
	01FWHR03SL AP-1	SO	01FWHR13SL AP-12	SO		
Date Collected	1/19/01		1/24/01			
Units	mg/Kg		mg/Kg			
	RESULT	Q RC	RESULT	Q RC		
diesel range organics	14.8	U	10.2	U		
residual range organics	24.5	U	16.9	U		

FY01 REPLACEMENT FAMILY HOUSING

FTW230

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2/26/01

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FTW230 Family Housing Revitalization
SDG: 1010040

DATA SUMMARY TABLE

Diesel/Residual Range Organics

Analyte	Sample ID	Field ID	Matrix	Date Collected	Units	0101532-01	0101532-02	0101532-06	0101532-08	0101532-09
						01FWHR01SL	01FWHR02SL	01FWHR08SL	01FWHR11SL	01FWHR12SL
						SO	SO	SO	SO	SO
						1/19/01	1/19/01	1/23/01	1/24/01	1/24/01
						mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
						RESULT	RESULT	RESULT	RESULT	RESULT
						Q	Q	Q	Q	Q
						RC	RC	RC	RC	RC
diesel range organics						14	16	7.7	5.9	6.7
residual range organics						51	59	19	28	28

FY01 REPLACEMENT FAMILY HOUSING

FTW230

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2/26/01

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FTW230 Family Housing Remediation
SDG: PR01

Diesel Residual Range Organics

DATA SUMMARY TABLE

Analyte	Sample ID	0101597-01				0101597-01RE			
	Field ID	01FWHR18SL				01FWHR18SL			
	Matrix	SO				SO			
	Date Collected	1/25/01				1/25/01			
	Units	mg/Kg				mg/Kg			
		RESULT	Q	RC		RESULT	Q	RC	
		88	J	b,d,t		93	J	b,e,t	
diesel range organics		290	J	b,t		240	J	b,e,t	
residual range organics									

FY01 REPLACEMENT FAMILY HOUSING

FTW230

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FTW230 Family Housing Revitalization
SDG: FHR02

Gasoline Range Organics

DATA SUMMARY TABLE

Analyte	Sample ID	0101532-01			0101532-02			0101532-06			0101532-07			0101532-08			0101532-09		
	Field ID	01FWHR01SL			01FWHR02SL			01FWHR08SL			01FWHR09SL			01FWHR11SL			01FWHR12SL		
	Matrix	SO			SO			SO			SO			SO			SO		
Date Collected		1/19/01			1/19/01			1/23/01			1/23/01			1/24/01			1/24/01		
Units		mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg			mg/Kg		
		RESULT	Q	RC	RESULT	Q	RC	RESULT	Q	RC	RESULT	Q	RC	RESULT	Q	RC	RESULT	Q	RC
gasoline range organics		2.4	UJ	b	3.1	UJ	b	1.4	U		3.1	U		1.4	U		1.4	U	

FY01 REPLACEMENT FAMILY HOUSING

FTW230

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2/26/01

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FTW230 Family Housing Restoration
SDG: IR01

DATA SUMMARY TABLE

Gasoline range Organics

Analyte	Sample ID Field ID Matrix Date Collected Units	0101597-01 01FWHR18SL SO 1/25/01 mg/Kg		0101597-04 01FWHR21SL SO 1/30/01 mg/Kg	
		RESULT	Q RC	RESULT	Q RC
gasoline range organics		2.6	J b	3.1	U

FY01 REPLACEMENT FAMILY HOUSING

FTW230

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FTW230 Family Housing Revitalization
SDG: FHR02

DATA SUMMARY TABLE

Gasoline Range Organics / BTEX

Analyte	Sample ID Field ID Matrix	Date Collected	Units	1010040001			1010040002			1010040003		
				01FWHR03SL AP-1	SO	1/19/01	01FWHR10SL	SO	1/23/01	01FWHR13SL AP-12	SO	1/24/01
				mg/Kg			mg/Kg			mg/Kg		
				RESULT	Q	RC	RESULT	Q	RC	RESULT	Q	RC
benzene				0.0362	J	b	0.0128	U		0.0154	U	
ethylbenzene				0.108	UR	b	0.0514	U		0.0618	U	
gasoline range organics				5.39	UR	b	2.57	U		3.09	U	
m,p-xylene				0.108	UR	b	0.0514	U		0.0618	U	
o-xylene				0.108	UR	b	0.0514	U		0.0618	U	
toluene				0.108	UR	b	0.0514	U		0.0618	U	

FY01 REPLACEMENT FAMILY HOUSING

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FTW230 Family Housing Remediation
SDG: 0040

DATA SUMMARY TABLE

Organophosphorus Pesticides

Sample ID		1010040004	
Field ID	Field ID	01FWHR17SL AP-11	
Matrix	Matrix	SO	
Date Collected	Date Collected	1/24/01	
Units	Units	mg/Kg	
Analyte	RESULT	Q	RC
4,4'-DDD	0.052	U	
4,4'-DDE	0.0684	J	c,f
4,4'-DDT	0.113	J	c,f
aldrin	0.0026	U	
alpha-BHC	0.0026	U	
alpha-chlordane	0.0026	UJ	c
beta-BHC	0.0026	U	
delta-BHC	0.0026	U	
dieldrin	0.0026	U	
endosulfan I	0.0026	U	
endosulfan II	0.0026	U	
endosulfan sulfate	0.0026	U	
endrin	0.0026	UJ	f
endrin aldehyde	0.0026	U	
endrin ketone	0.0026	U	
gamma-BHC	0.0026	U	
gamma-chlordane	0.0026	U	
heptachlor	0.0026	U	
heptachlor epoxide	0.0026	U	
methoxychlor	0.0026	UJ	c,f
toxaphene	0.17	U	

FY01 REPLACEMENT FAMILY HOUSING

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FTW230 Family Housing Revitalization
SDG: 1010040

Organochlorine Pesticides

DATA SUMMARY TABLE

Analyte	Sample ID Field ID Matrix Date Collected Units	0101532-03 01FWHR04SL SO 1/20/01 g/Kg RESULT Q RC	0101532-04 01FWHR06SL SO 1/21/01 g/Kg RESULT Q RC	0101532-04DL 01FWHR06SL SO 1/21/01 g/Kg RESULT Q RC	0101532-05 01FWHR07SL SO 1/23/01 g/Kg RESULT Q RC	0101532-05DL 01FWHR07SL SO 1/23/01 g/Kg RESULT Q RC	0101532-10 01FWHR15SL SO 1/24/01 g/Kg RESULT Q RC
4,4'-DDD		5.5 U	7.7 U	77 U	4.3 U	8.7 U	4.7 U
4,4'-DDE		5.5 U	280 J	250	42	42	130 J
4,4'-DDT		5.5 U	460 J	480	81 J	86	200 J
aldrin		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
alpha-BHC		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
alpha-chlordane		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
beta-BHC		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
delta-BHC		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
dieldrin		5.5 U	7.7 U	77 U	4.3 U	8.7 U	4.7 U
endosulfan I		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
endosulfan II		5.5 U	7.7 U	77 U	4.3 U	8.7 U	4.7 U
endosulfan sulfate		5.5 U	7.7 U	77 U	4.3 U	8.7 U	4.7 U
endrin		5.5 U	7.7 U	77 U	4.3 U	8.7 U	4.7 U
endrin aldehyde		5.5 U	7.7 U	77 U	4.3 U	8.7 U	4.7 U
endrin ketone		5.5 U	7.7 U	77 U	4.3 U	8.7 U	4.7 U
gamma-BHC		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
gamma-chlordane		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
heptachlor		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
heptachlor epoxide		2.8 U	4 U	40 U	2.2 U	4.5 U	2.4 U
methoxychlor		28 U	40 U	400 U	22 U	45 U	24 U
toxaphene		280 U	400 U	4000 U	220 U	450 U	240 U

FY01 REPLACEMENT FAMILY HOUSING

FTW230

Organic Pesticides

DATA SUMMARY TABLE

Analyte	Sample ID Field ID Matrix Date Collected Units	0101532-10DL 01FWHR15SL SO 1/24/01 g/Kg RESULT Q RC	0101532-11 01FWHR16SL SO 1/24/01 g/Kg RESULT Q RC	0101532-11DL 01FWHR16SL SO 1/24/01 g/Kg RESULT Q RC
4,4'-DDD		24 U	4.5 U	23 U
4,4'-DDE		140	120 J	120
4,4'-DDT		230	170 J	200
aldrin		12 U	2.3 U	12 U
alpha-BHC		12 U	2.3 U	12 U
alpha-chlordane		12 U	2.3 U	12 U
beta-BHC		12 U	2.3 U	12 U
delta-BHC		12 U	2.3 U	12 U
dieldrin		24 U	4.5 U	23 U
endosulfan I		12 U	2.3 U	12 U
endosulfan II		24 U	4.5 U	23 U
endosulfan sulfate		24 U	4.5 U	23 U
endrin		24 U	4.5 U	23 U
endrin aldehyde		24 U	4.5 U	23 U
endrin ketone		24 U	4.5 U	23 U
gamma-BHC		12 U	2.3 U	12 U
gamma-chlordane		12 U	2.3 U	12 U
heptachlor		12 U	2.3 U	12 U
heptachlor epoxide		12 U	2.3 U	12 U
methoxychlor		120 U	23 U	120 U
toxaphene		1200 U	230 U	1200 U

FY01 REPLACEMENT FAMILY HOUSING

FTW230

Prepared by ETHIX

2/26/01

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FTW230 Family Housing Revitalization
SDG: FHR01

Organochlorine Pesticides

DATA SUMMARY TABLE

Analyte	Sample ID Field ID Matrix Date Collected Units	0101597-02 01FWHR19SL SO 1/27/01 g/Kg RESULT Q RC	0101597-03 01FWHR20SL SO 1/29/01 g/Kg RESULT Q RC	0101597-03DL 01FWHR20SL SO 1/29/01 g/Kg RESULT Q RC
4,4'-DDD		4.7 UJ t	4.2 UJ t	21 UJ t
4,4'-DDE		4.7 UJ t	41 J t	43 J t
4,4'-DDT		4.7 UJ t	150 J o,t	230 J t
aldrin		2.4 UJ t	2.2 UJ t	11 UJ t
alpha-BHC		2.4 UJ t	2.2 UJ t	11 UJ t
alpha-chlordane		2.4 UJ t	2.2 UJ t	11 UJ t
beta-BHC		2.4 UJ t	2.2 UJ t	11 UJ t
delta-BHC		2.4 UJ t	2.2 UJ t	11 UJ t
dieldrin		4.7 UJ t	4.2 UJ t	21 UJ t
endosulfan I		2.4 UJ t	2.2 UJ t	11 UJ t
endosulfan II		4.7 UJ t	4.2 UJ t	21 UJ t
endosulfan sulfate		4.7 UJ t	4.2 UJ t	21 UJ t
endrin		4.7 UJ t	4.2 UJ t	21 UJ t
endrin aldehyde		4.7 UJ t	4.2 UJ t	21 UJ t
endrin ketone		4.7 UJ t	4.2 UJ t	21 UJ t
gamma-BHC		2.4 UJ t	2.2 UJ t	11 UJ t
gamma-chlordane		2.4 UJ t	2.2 UJ t	11 UJ t
heptachlor		2.4 UJ t	2.2 UJ t	11 UJ t
heptachlor epoxide		2.4 UJ t	2.2 UJ t	11 UJ t
methoxychlor		24 UJ t	22 UJ t	110 UJ t
toxaphene		240 UJ t	220 UJ t	1100 UJ t

FY01 REPLACEMENT FAMILY HOUSING

FTW230

Prepared by: ETHIX

2/26/01

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FTW230 Family Housing Registration
SDG: [REDACTED] R02

DATA SUMMARY TABLE

Analyte	Sample ID Field ID Matrix Date Collected Units	1010040001 01FWHR03SL AP-1 SO 1/19/01 mg/Kg		1010040003 01FWHR13SL AP-12 SO 1/24/01 mg/Kg		1010040004 01FWHR17SL AP-11 SO 1/24/01 mg/Kg	
		RESULT	Q RC	RESULT	Q RC	RESULT	Q RC
lead		8.84	U	9.69	J n	14.9	

FY01 REPLACEMENT FAMILY HOUSING

FTW230

Prepared by ETHIX

2/26/01

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FTW230 Family Housing Revitalization
SDG: 1010040

DATA SUMMARY TABLE

Total

Sample ID	Field ID	Matrix	Date Collected	Units	Analyte
0101532-11	01FWHR16SL	SO	1/24/01	mg/Kg	lead
RESULT Q RC					
12.2					

FY01 REPLACEMENT FAMILY HOUSING

FTW230

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FTW230 Family Housing Revitalization
SDG: FHR01

Total Metals

DATA SUMMARY TABLE

Analyte	Sample ID Field ID Matrix Date Collected Units	0101597-01 01FWHR18SL SO 1/25/01 mg/Kg			0101597-02 01FWHR19SL SO 1/27/01 mg/Kg			0101597-03 01FWHR20SL SO 1/29/01 mg/Kg		
		RESULT	Q	RC	RESULT	Q	RC	RESULT	Q	RC
arsenic		14.7								
barium		1240	J	g						
cadmium		0.96								
chromium		61.3	J	g						
lead		197			9			27		
mercury		0.31								
selenium		0.61								
silver		0.7								

FY01 REPLACEMENT FAMILY HOUSING

FTW230

Prepared by: ETHIX

2/26/01

APPENDIX 5 Page 12

FTW230 Family Housing Reevaluation
SDG: 1R02

Appendix D

Data Quality Summary

by Analysis Type

Data Quality Summary

Gasoline Range Organics

	Data Points	% of Data	% of Qualified Data	Bias (low/none/high)
TOTAL DATA POINTS:	11	-	-	-
TOTAL QUALIFIED DATA POINTS:	3	27.3%	-	-
TOTAL REJECTED DATA POINTS:	1	9.1%	-	-
Qualified/Rejected as a result of:				
b - Surrogate spike recovery outside control limits	4	36.4%	100.0%	L

Data Quality Summary

Diesel Range Organics

	Data Points	% of Data	% of Qualified Data	Bias (low/none/high)
TOTAL DATA POINTS:	9	-	-	-
TOTAL QUALIFIED DATA POINTS:	2	22.2%	-	-
TOTAL REJECTED DATA POINTS:	0	0.0%	-	-
Qualified/Rejected as a result of:				
b,d,t - Multiple Reasons	1	11.1%	50.0%	L
b,e,t - Multiple Reasons	1	11.1%	50.0%	L

Data Quality Summary

Residual Range Organics

	Data Points	% of Data	% of Qualified Data	Bias (low/none/high)
TOTAL DATA POINTS:	9	-	-	-
TOTAL QUALIFIED DATA POINTS:	2	22.2%	-	-
TOTAL REJECTED DATA POINTS:	0	0.0%	-	-
Qualified/Rejected as a result of:				
b,e,t - Multiple Reasons	1	11.1%	50.0%	L
b,t - Multiple Reasons	1	11.1%	50.0%	L

Data Quality Summary

BTEX

	Data Points	% of Data	% of Qualified Data	Bias (low/none/high)
TOTAL DATA POINTS:	55	-	-	-
TOTAL QUALIFIED DATA POINTS:	16	29.1%	-	-
TOTAL REJECTED DATA POINTS:	9	16.4%	-	-
Qualified/Rejected as a result of:				
b - Surrogate spike recovery outside control limits	15	27.3%	60.0%	L
b,t - Multiple Reasons	5	9.1%	20.0%	L
t - Sample temperature outside acceptance criteria	5	9.1%	20.0%	L

Data Quality Summary

Organochlorine Pesticides

	Data Points	% of Data	% of Qualified Data	Bias (low/none/high)
TOTAL DATA POINTS:	299	-	-	-
TOTAL QUALIFIED DATA POINTS:	75	25.1%	-	-
TOTAL REJECTED DATA POINTS:	0	0.0%	-	-
t - Sample temperature outside acceptance criteria	62	20.7%	82.7%	L
o - Result exceeded calibration range	7	2.3%	9.3%	N
c,f - Multiple Reasons	3	1.0%	4.0%	N
o,t - Multiple Reasons	1	0.3%	1.3%	L
f - Laboratory duplicate failed precision criteria	1	0.3%	1.3%	N
c - MS/MSD recovery outside control limits	1	0.3%	1.3%	L

Data Quality Summary

Total Metals

	Data Points	% of Data	% of Qualified Data	Bias (low/none/high)
TOTAL DATA POINTS:	20	-	-	
TOTAL QUALIFIED DATA POINTS:	5	25.0%	-	
TOTAL REJECTED DATA POINTS:	0	0.0%	-	
Qualified/Rejected as a result of:				
n - Poor QA/QC Duplicate Precision	3	15.0%	60.0%	N
g - Serial Dilution outside precision limits	2	10.0%	40.0%	N

--End of Appendix 5--

CEPOA-EN-ES-M
U.S. Army Corps of Engineers

Alaska District

Technical Memorandum
Hazardous Material/Building Demolition Survey,
FY01 Replacement Family Housing,
Ft Wainwright, Alaska

March 2001

Engineering Services Branch, Materials Section

EXECUTIVE SUMMARY

The buildings associated with FY01 Replacement Family Housing Project on Ft. Wainwright, Alaska were evaluated by the US Army Corps of Engineers, Alaska District, Engineering Services Branch to determine the existence and location of asbestos and other hazardous materials at the site. The information obtained will be used to guide demolition and disposal activities to be performed at the site during the planned demolition of the twelve buildings.

Based on current findings, asbestos is present at concentrations greater than 1%, in pipe insulation, floor tile, sheet vinyl, mastics, caulking, kitchen sink undercoating, electrical penetration sealant and the joint compound used to construct the gypsum wallboard systems.

All painted surfaces should be assumed to be covered with lead-based paint. However, recent interpretations of EPA regulations now permit the disposal of debris generated from residential structures in non-hazardous waste landfills without testing the debris for the toxicity characteristic of lead by the Toxicity Characteristic Leaching Procedure (TCLP).

All ballasts associated with fluorescent light fixtures should be managed as hazardous material unless they are labeled as not containing PCBs.

Each unit (8 per building) also contains three smoke detectors containing 0.9 microcuries of Americium 241 and two mercury-containing thermostats. Additionally, the seven buildings located on the north side of the base (buildings 1014, 1027, 1028, 1029, 1030, 1038, and 1039) are heated with hydronic heating systems that utilize a glycol solution to prevent freezing.

Hazardous materials management activities are addressed under specific sections of EPA, OSHA, DOT and state regulations. Suitable precautions must be taken to prevent worker exposure, emissions to the environment, and to comply with applicable regulations. Friable and non-friable asbestos-containing material (ACM) that will become friable during demolition activities should be removed prior to building demolition. Non-friable asbestos-containing material that is not likely to release asbestos fibers during demolition activities may be left in place. Worker protection is required by labor standards in 29 CFR. Waste management is regulated under 40 CFR. Transportation of asbestos waste is regulated under 49 CFR.

Background

In support of the Army's efforts to improve the housing facilities on Ft. Wainwright, the Alaska District, Corps of Engineers, will oversee the demolition and disposal of twelve 8-plex housing units (See Figure 1 & 2).

This report describes the asbestos-containing material (ACM) and other hazardous materials in the buildings as a whole, its kinds and quantities, then discusses their potential impacts on work to be performed during the demolition and disposal of the buildings.

Survey

Methods and Limitations

CEPOA-EN-ES-M was tasked to provide a survey of ACM in the facilities scheduled to be demolished in the summer of 2001. In addition to the ACM survey, hazardous materials encountered while conducting the survey were also documented.

From 24 January through 26 January 2001, Bret Walters (industrial hygienist) and Ron Shafer (civil engineer) of CEPOA-EN-ES-M, performed a "walk-through" of approximately 90% of the housing units. These units were occupied at the time of the walk-through and were not available for destructive type sampling. The purpose of this walk-through was to identify and determine homogeneous areas. From 13 February through 16 February 2001, Ron Shafer performed an asbestos demolition survey of the buildings to be demolished as part of the FY01 Family Housing Replacement project. All asbestos-related work was performed in general compliance with EPA/AHERA guidelines. The data obtained will be used to define the work practices and to characterize the wastestreams that will be generated during the demolition of the buildings. It should be noted that CEPOA-EN-ES-M was only provided access to 1 empty unit out of the seven "northern" buildings and approximately 5 empty units out of the 5 "southern" buildings at the time that the survey was performed. Access to this limited number of units for destructive sampling in conjunction with the walk through performed in January is considered adequate for the purposes of this asbestos demolition survey. This report is based on the sample results and observations obtained from the units that were available for inspection.

The survey concentrated on collecting samples from materials suspected to contain asbestos and collecting exterior soil samples from locations having a high potential for containing unacceptable concentrations of lead. Asbestos analysis was performed on 159 materials collected from 92 locations located throughout the interior and exterior of the buildings (see figures 3 through 7). Ten soil samples were collected near the building foundations; in the area of the drip line to determine the potential for lead contamination of the soil from lead based building materials (see figures 1 & 2). The soil samples were submitted for analysis by EPA method 6010B. All of the building material samples were submitted for analysis by polarized light microscopy (PLM). Sample descriptions and laboratory data are provided in Appendix A.

Results

Asbestos

The results of the asbestos analyses are provided in Appendix A and are discussed below. Asbestos containing material (ACM) is present in pipe and pipe fitting insulation, floor coverings, leveling compounds, caulking/mastics, sink undercoating, electrical penetration sealant and the joint compound used to construct the gypsum wallboard systems. In particular to buildings 4129, 4130, 4133, 4134 & 4139 aluminum backed fiberglass insulation is attached to the floor joists (approximately 6 inches out from the rim joist) with mastic containing asbestos in concentrations greater than 1 percent.

Pipe Insulation:

Building 1014:

Each unit (8 per building) contains various amounts of asbestos containing pipe insulation. The accessible (visible) pipe insulation throughout this particular building and mechanical room has been previously abated and replaced with fiberglass insulation, however, steam and domestic hot and cold water lines concealed in wall and ceiling spaces still contains thermal system insulation containing asbestos. The pipe insulation should be considered friable and is located on steam and water lines within four vertical pipe chases located within walls and in horizontal floor/ceiling spaces located primarily above the kitchens. Though significant disparities likely exist, the average, each unit contains approximately 35 meters of unexposed pipe insulation and 50 insulated pipe fittings located behind walls and within floor/ceiling spaces. Most of the unexposed pipe insulation is in good condition but some portions have deteriorated and previous abatement activities appear to have been incomplete. Dust and debris from deteriorated pipe insulation is distributed throughout the pipe chases and floor/ceiling spaces. Vertical pipe chases (both active and abandoned) are open to the basements. Disturbance, without appropriate precautions may result in undesirable migration of asbestos fibers. In addition to the asbestos-containing insulation within the structure, all pipe and fitting insulation located on piping within the utilidors and loose debris within the utilidors also contains asbestos at concentrations greater than 1%. Suitable

precautions and properly trained workers must be utilized while performing disconnection and connection of utilities within the utilidors.

Buildings 1027, 1028:

Each unit (8 per building) contains various amounts of asbestos containing pipe insulation. The accessible (visible) pipe insulation throughout these particular buildings and mechanical rooms has been previously abated and replaced with fiberglass insulation, however, steam and domestic hot and cold water lines concealed in wall and ceiling spaces still contain thermal system insulation containing asbestos. The pipe insulation should be considered friable and is located on steam and water lines within two vertical pipe chases located within walls and in horizontal floor/ceiling spaces located primarily above the kitchens. Though significant disparities likely exist, the average, each unit contains approximately 35 meters of unexposed pipe insulation and 50 insulated pipe fittings located behind walls and within floor/ceiling spaces. Most of the unexposed pipe insulation is in good condition but some portions have deteriorated and previous abatement activities appear to have been incomplete. Dust and debris from deteriorated pipe insulation is distributed throughout the pipe chases and floor/ceiling spaces. Vertical pipe chases (both active and abandoned) are open to the basements. Disturbance, without appropriate precautions may result in undesirable migration of asbestos fibers. In addition to the asbestos-containing insulation within the structure, all pipe and fitting insulation located on piping within the utilidors and loose debris within the utilidors also contains asbestos at concentrations greater than 1%. Suitable precautions and properly trained workers must be utilized while performing disconnection and connection of utilities within the utilidors.

Buildings 1029, 1030, 1038, & 1039:

Each unit (8 per building) contains various amounts of asbestos containing pipe insulation with random units having had previous abatement work performed in association with repairs and replacement of the hydronic heating system. The accessible pipe insulation is generally labeled either ACM or ACM free and can be easily distinguished (by appearance and texture) from the fiberglass insulation that was used to replace it. All non-labeled pipe insulation should be considered to contain friable asbestos and is located on steam and domestic water lines within two vertical pipe chases located within walls and in horizontal floor/ceiling spaces located primarily in the basements and above the kitchens. Though significant disparities exist, each unit contains on average, approximately 35 meters of unexposed pipe insulation and 50 insulated pipe fittings located behind walls and within floor/ceiling spaces. Also, although significant disparities exist, each unit contains on average approximately 46 meters of exposed pipe insulation and 50 insulated pipe fittings which are identified as having ACM located primarily in the basements. In addition, the basements in units 3 and units 6 in each of these buildings (eight tanks total) contains a tank having dimensions of approximately 8' x 3' in diameter and has approximately 125 square feet of TSI containing asbestos. Most of the unexposed pipe insulation is in good condition but some portions have deteriorated and previous abatement activities appear to have been

incomplete. Dust and debris from deteriorated pipe insulation is distributed throughout the pipe chases and floor/ceiling spaces. Vertical pipe chases (both active and abandoned) are open to the basements. Disturbance, without appropriate precautions may result in undesirable migration of asbestos fibers. The exposed asbestos-containing insulation is generally in good condition. The mechanical rooms for each of these buildings also contain various amounts of asbestos containing pipe insulation with random units having had previous abatement work performed in association with repairs. The asbestos containing pipe insulation located in the mechanical rooms is not adequately labeled but can be easily distinguished (by appearance and texture) from the fiberglass insulation that was used to replace it. On average, each of the mechanical rooms contain approximately 35 meters of TSI containing asbestos with approximately 65 associated joints and fittings, and an equal amount of non-labeled fiberglass insulation. In addition to the asbestos-containing insulation within the structures to be demolished, all pipe and fitting insulation located on piping within the utilidor and loose debris within the utilidor also contains asbestos at concentrations greater than 1%. Suitable precautions and properly trained workers must be utilized while performing disconnection and connection of utilities within the utilidors.

Buildings 4130, 4133, 4134, & 4139:

Each unit (8 per building) contains various amounts of asbestos containing pipe insulation with random units having had previous abatement work performed in association with repairs and replacement of the hydronic heating system. The accessible asbestos containing pipe insulation is generally labeled ACM and can be easily distinguished (by appearance and texture) from the fiberglass insulation that was used to replace it. The accessible asbestos containing pipe insulation is located on roof drains, water and steam lines and wall penetrations located in horizontal floor/ceiling spaces primarily in the basements. All non-labeled pipe insulation is generally unexposed and should be considered to contain friable asbestos and is located on roof drains and water lines within pipe chases located within walls common to two units. Though significant disparities exist, each unit contains on average, approximately 25 meters of unexposed asbestos containing pipe insulation and 40 insulated pipe fittings located behind walls and within floor/ceiling spaces and approximately 40 meters of exposed asbestos containing pipe insulation and 40 insulated pipe fittings located primarily in the basements. Most of the unexposed pipe insulation is in good condition but some portions have deteriorated and previous abatement activities appear to have been incomplete. Dust and debris from deteriorated pipe insulation is distributed throughout the pipe chases and floor/ceiling spaces. Disturbance, without appropriate precautions may result in undesirable migration of asbestos fibers. The exposed asbestos-containing insulation is generally in good condition and labeled as asbestos-containing. The mechanical rooms for building 4130 and 4139 have been previously abated and the asbestos containing TSI replaced with fiberglass insulation, however the mechanical rooms for buildings 4133, and 4134 contain various amounts of asbestos containing pipe insulation and various amounts of fiberglass insulation. The asbestos containing pipe insulation can be

distinguished (by appearance and texture) from the fiberglass insulation that was used to replace it. On average, each of the mechanical rooms (4133 & 4134) contain approximately 8 meters of TSI containing asbestos with approximately 30 associated joints and fittings. In addition to the asbestos-containing insulation within the structures to be demolished, all pipe and fitting insulation located on piping within the utilidors and loose debris within the utilidors also contains asbestos at concentrations greater than 1%. Suitable precautions and properly trained workers must be utilized while performing disconnection and connection of utilities within the utilidors.

Buildings 4129:

Each unit (8) contains substantial amounts of asbestos containing pipe insulation. All piping, steam, condensate, roof drains, hot and cold water piping throughout this particular building and mechanical room has the original thermal system insulation containing asbestos in concentrations greater than 1%. The pipe insulation should be considered friable and is located on steam, condensate, hot and cold domestic and hydronic water lines within vertical pipe chases located within walls common to two units and in horizontal floor/ceiling spaces located primarily above the kitchens. Though significant disparities likely exist, on average, each unit contains approximately 50 meters of unexposed pipe insulation and 70 insulated pipe fittings located behind walls and within floor/ceiling spaces and approximately 50 meters of exposed pipe insulation and 75 insulated pipe fittings located throughout the units. Most of the pipe insulation is in good condition but some portions have deteriorated. Dust and debris from deteriorated pipe insulation is distributed throughout the pipe chases and floor/ceiling spaces. Disturbance, without appropriate precautions may result in undesirable migration of asbestos fibers. The mechanical room in this building was not accessible but it is estimated to contain approximately 150 meters and 250 joints of asbestos containing pipe insulation. In addition to the asbestos-containing insulation within the structure and mechanical room, all pipe and fitting insulation located on piping within the utilidors and loose debris within the utilidors also contains asbestos at concentrations greater than 1%. Suitable precautions and properly trained workers must be utilized while performing disconnection and connection of utilities within the utilidors.

Floor Coverings/Mastics:

Buildings 1014, 1027, 1028, 1029, 1030, 1038, & 1039:

All of the bathroom floors and the front and rear entryways, kitchens and the stairs between the kitchens and rear entryways in approximately half of the units are covered with flooring materials containing asbestos at concentrations greater than 1%. The asbestos-containing flooring systems generally consist of four layers of sheet vinyl/mastic, over underlayment/leveling compound over floor tile/mastic over asphaltic felt/paper over tongue and groove wood over subflooring. All sheet vinyl, floor tiles, mastics, underlayments/leveling compounds and asphaltic felt/paper contain asbestos at concentrations greater than 1%. The areas that have previously been abated can be identified by the presence of staples that

protrude through the subfloor and are visible from the basements. Additionally, the stairs and landings between the first and second floors of all of the units are covered with carpet/pad over asbestos-containing floor tile. With the exception of unit 1 in building 1039, no asbestos-containing floor coverings were encountered in the basements of the units that were inspected. The basement floor of unit 1 in building 1039 is covered with 9" x 9" floor tiles with mastic. Both the mastic and the floor tiles contain asbestos in concentrations greater than 1 percent. The asbestos-containing floor coverings are generally not friable.

Buildings 4129, 4130, 4133, 4134, 4139:

The front and rear entryways, kitchens and dining rooms are covered with multiple layers of sheet vinyl flooring and mastic. None of the sheet vinyl or mastic in these areas tested positive for asbestos. All the bathroom floors contain multiple layers of sheet vinyl, mastic, subflooring and asphaltic felt containing asbestos at concentrations greater than 1%. Second floor bedrooms, closets, hallways and landings consist of carpet over carpet pad over 9" x 9" floor tiles over mastic over asphaltic felt over mastic over plywood subflooring over hardwood over subflooring. The 9"x9" floor tiles, both layers of mastic and asphaltic felt all tested positive for asbestos at concentrations greater than 1%. It should be assumed that all sheet vinyl, floor tiles, mastics, underlayments/leveling compounds and asphaltic felt/paper located on the second floor in all the units of these buildings contain asbestos at concentrations greater than 1%. No asbestos-containing floor coverings were encountered in the basements of the units that were inspected. The asbestos-containing floor coverings are generally not friable.

Caulking/Mastics:

Buildings 1014, 1027, 1028, 1029, 1030, 1038, & 1039:

The interior surfaces of all exterior concrete walls in all of the basements and mechanical rooms are covered with two to four layers of fiberboard adhered with black asphaltic mastic. Three samples of the mastic were tested for asbestos and all indicated negative results, however samples of similar materials obtained in conjunction with similar Fort Wainwright housing projects tested positive for asbestos at concentrations greater than one percent. The material is generally in relatively good condition. Though the fiberboard can be easily crumbled the asbestos, if present, is bound in a matrix that is non-friable. The interior joints of all concrete walls in all of the basements and mechanical rooms are sealed with asbestos-containing caulk.

Buildings 4129, 4130, 4133, 4134, 4139:

Aluminum backed fiberglass insulation has been installed at the rim joists to a point approximately 8 inches towards the interior of the building. The insulation is attached to and between the floor joists of both the basement ceiling and the first floor ceiling with a dark brown mastic containing asbestos in concentrations greater than 1 percent.

Wallboard Systems:**Buildings 1014, 1027, 1028, 1029, 1030, 1038, & 1039:**

The gypsum wallboard systems covering all interior walls and ceilings above the basement levels, consist of gypsum wallboard panels, wood strips attached to the studs at the top and base of the wallboard panels with paper-tape and joint compound used to seal seams and smooth anchoring systems. Additionally, the bathroom ceilings consist of two layers of wallboard system separated by 38-millimeter lathe. Chrysotile was reported in joint compound samples collected at concentrations ranging from 2% to 4%. Composite sample results for the entire wallboard system indicate that asbestos concentrations are less than 1%.

Buildings 4129, 4130, 4133, 4134, 4139:

The gypsum wallboard system covering walls which separate the units above the basement level consist of three layers of wallboard. Only the exposed layer is finished with joint compound containing chrysotile in concentrations between 2 and 4 percent. The gypsum wallboard systems covering all interior walls above the basement levels, consist of a single layer of gypsum wallboard panels, wood strips attached to the studs at the top and base of the wallboard panels with paper-tape and joint compound used to seal seams and smooth anchoring systems. Additionally, the 1st and 2nd floor ceilings consist of two layers of wallboard. Both layers of ceiling wallboard have been finished with joint compound containing asbestos. In addition, the two layers of wallboard on the second floor ceilings are separated by a multilayered vapor barrier attached to the first layer of wallboard. The vapor barrier is attached to the first layer of wallboard with a black mastic. Chrysotile was reported in the mastic, and the joint compound samples collected in both layers of wallboard at concentrations greater than 1 percent. Composite sample results for the entire wallboard system indicate that asbestos concentrations are less than 1%.

Miscellaneous Materials/Debris:

Asbestos was detected at concentrations greater than 1% in the undercoating applied to all of the kitchen sinks, and in electrical penetration sealant used to seal abandoned conduit that terminates in each basement. The sink undercoating is applied as a thin layer and the asbestos is bound in a non-friable asphaltic matrix. The electrical penetration sealant (approximately 100 grams per unit) exists as a pliable, clay-like, non-friable matrix.

Lead***General:***

The age and nature of use of the buildings make it very likely that significant portions of the paint systems applied to building components contain lead-based paint. Additionally, sampling and testing each paint system is impractical when the majority of

the units are inaccessible and the nature of the demolition work to be performed does not require each individual system to be tested. For the purposes of the Replacement Family Housing project, it should be assumed that all paint systems contain lead-based paint unless the contractor determines specific systems do not through sample analysis.

Whole Building Sample:

Recent clarifications of interpretations of EPA waste disposal regulations eliminated the requirement to test debris generated from residential structures for the hazardous characteristic of TCLP lead. No TCLP sampling or testing was performed for the survey and the testing of building debris for leachable lead will not be required during construction.

Soil Samples:

Ten soil samples were collected near the foundations of each of the ten occupied buildings. Soil samples were not collected near the two unoccupied buildings due to the difficulty in obtaining representative samples from frozen soil under significant snow cover. Additionally, the data from the remaining buildings can be used to estimate the concentrations that are likely to be found where samples were not collected. Lead results around the occupied buildings ranged from 9.5 mg/Kg to 226 mg/Kg. Lead data are provided in Appendix A and sample locations are provided in Figures 1 & 2. No lead concentrations exceed the most conservative action level of 400 mg/Kg established by EPA. Post-demolition lead samples should be collected to verify that soils adjacent to the project are not contaminated by activities impacting lead containing building components.

PCB-Containing Ballasts:

Though the paint systems do not appear to contain significant concentrations of PCBs, all ballasts associated with fluorescent light fixtures should be managed as hazardous material unless they are labeled as not containing PCBs. Though significant disparities likely exist between individual units, on average, approximately four such fixtures are likely to be encountered in each unit.

Other Hazardous Materials***Mercury-Containing Thermostats and Lamps:***

Each unit contains two mercury-containing thermostats and approximately four fluorescent fixtures containing approximately two mercury-containing lamps each. Mercury-containing materials should be recycled or properly disposed of as a separate wastestream.

Glycol Solution:***Buildings 1014, 1027, 1028, 1029, 1030, 1038, & 1039:***

These buildings are heated with hydronic heating systems that utilize a glycol solution to prevent freezing. The entire system should be drained and the contents containerized and recycled or properly disposed of as a separate wastestream.

Radioactive Materials:

Each unit (8 per building) also contains three smoke detectors containing 0.9 microcuries of Americium 241. The smoke detectors should be removed and recycled or disposed of properly.

Discussion**Asbestos**

Airborne asbestos is a health hazard. It is regulated under both Alaska State and Federal OSHA Labor standards. Alaska regulations have adopted, as State regulation, substantially all Federal OSHA standards for general industry, construction and some other industries. The State maintains enforcement authority. The Federal OSHA regulation governing worker exposure to asbestos is 29 CFR 1026.1101. The permissible exposure limit (PEL) for most types of asbestos is 0.1 fiber per cc of air for an 8 hour work period. Presumed asbestos-containing material (PACM) includes thermal insulation and surfacing found in buildings constructed no later than 1980 and directs levels of worker protection when present during some tasks. Rebuttal of presumption requires analysis of three bulk samples from each homogenous area. The analysis must be done by an NVLAP or other accredited laboratory and must demonstrate that no asbestos is present.

General

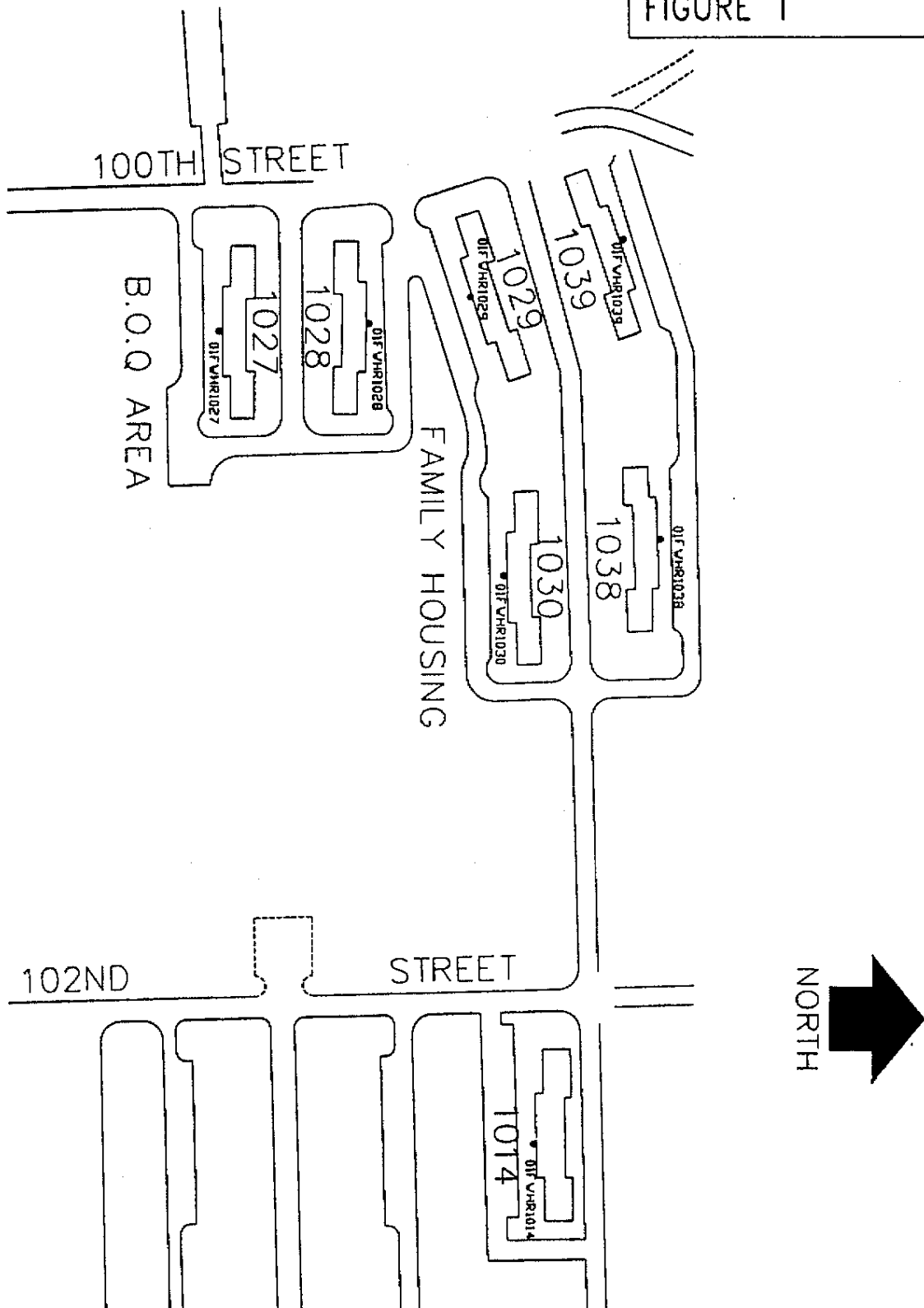
The presence of asbestos in ACM is not a health hazard unless the asbestos fibers are freed from their matrix and become airborne, i.e. capable of being inhaled. The term "friable" is a general description for ACM that is likely to release fibers if it is disturbed. The term "non-friable ACM" refers to ACM where the asbestos fibers are bound in a stiff matrix, such as vinyl, asphalt, or cement, and consequently unlikely to release fibers unless the matrix is damaged. Non-friable ACM is governed by less stringent regulations than friable ACM and consequently non-friable ACM is less expensive to remove and dispose than friable ACM.

Conclusions

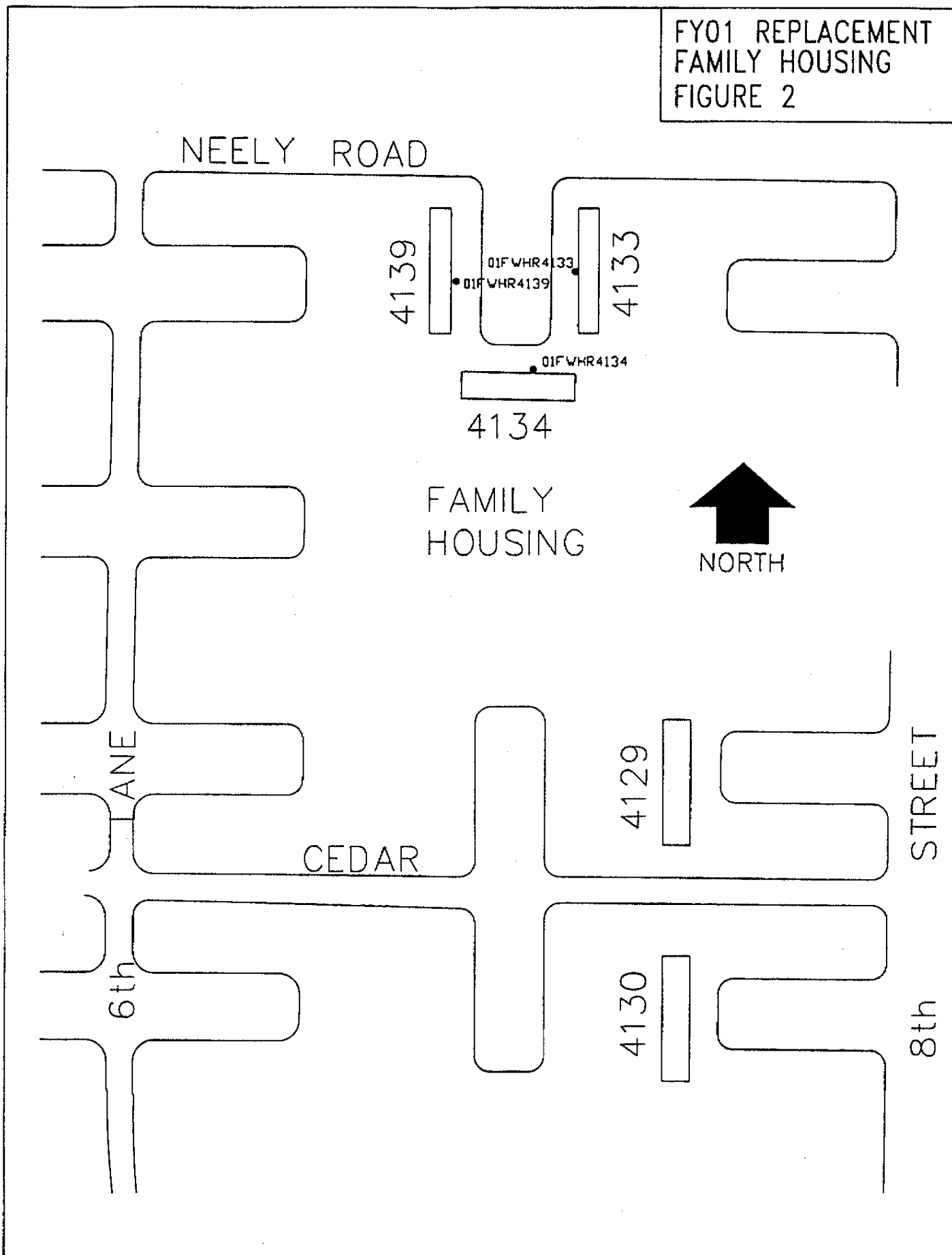
To ensure the protection of personnel and the environment, most hazardous materials should be removed and disposed of as a separate wastestream prior to building demolition. However, if abatement of ACM presents a significant hazard to workers, some ACM may be left in place during the building's demolition. If ACM remains in the building during demolition, special demolition procedures may be required.

Hazardous materials management activities are addressed under specific sections of EPA, OSHA, DOT and state regulations. Suitable precautions must be taken to prevent worker exposure, emissions to the environment, and to comply with applicable regulations. Worker protection is required by labor standards in 29 CFR. Waste management is regulated under 40 CFR. Transportation of asbestos waste is regulated under 49 CFR.

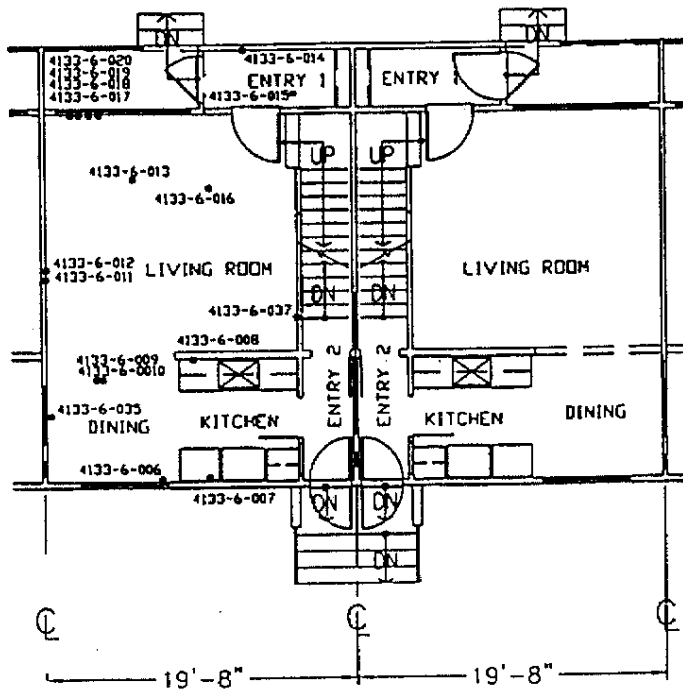
FY01 REPLACEMENT
FAMILY HOUSING
FIGURE 1



FY01 REPLACEMENT
FAMILY HOUSING
FIGURE 2

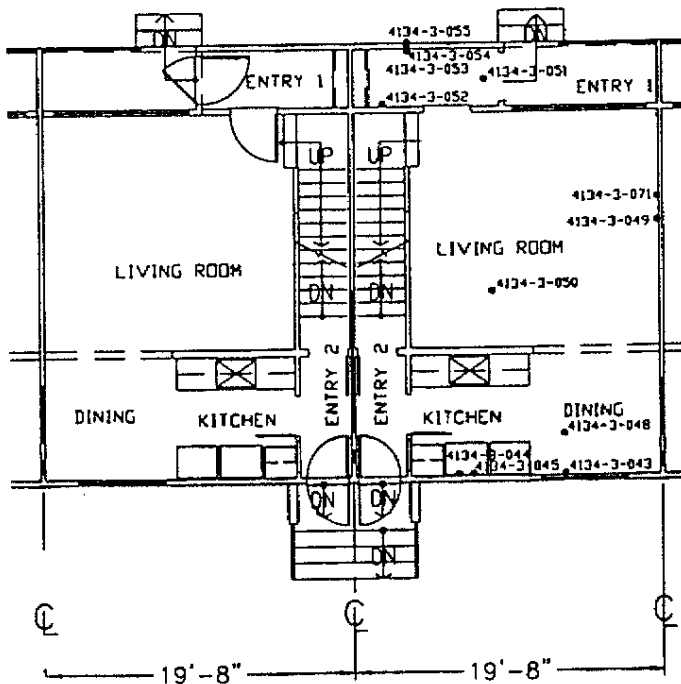


FY01 REPLACEMENT
FAMILY HOUSING
FIGURE 3



EXISTING FIRST FLOOR PLAN

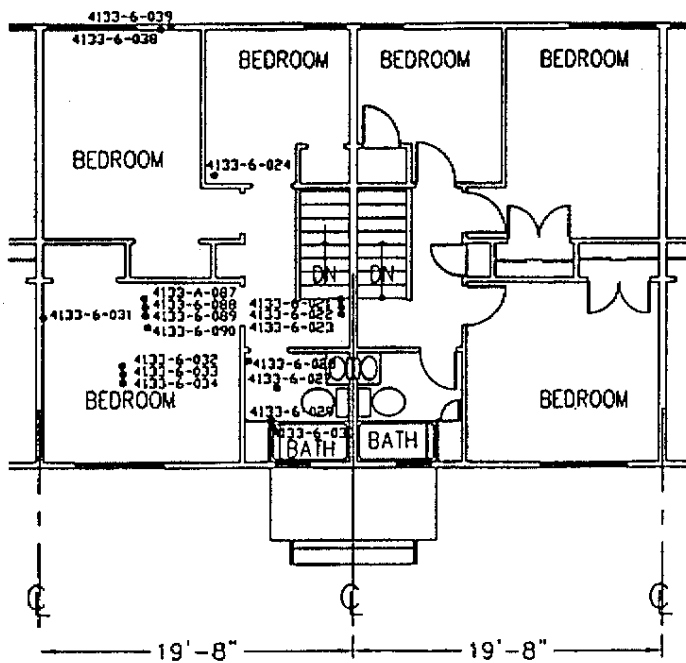
TYPICAL BUILDINGS 4129, 4130, 4133, 4134, 4139



EXISTING FIRST FLOOR PLAN

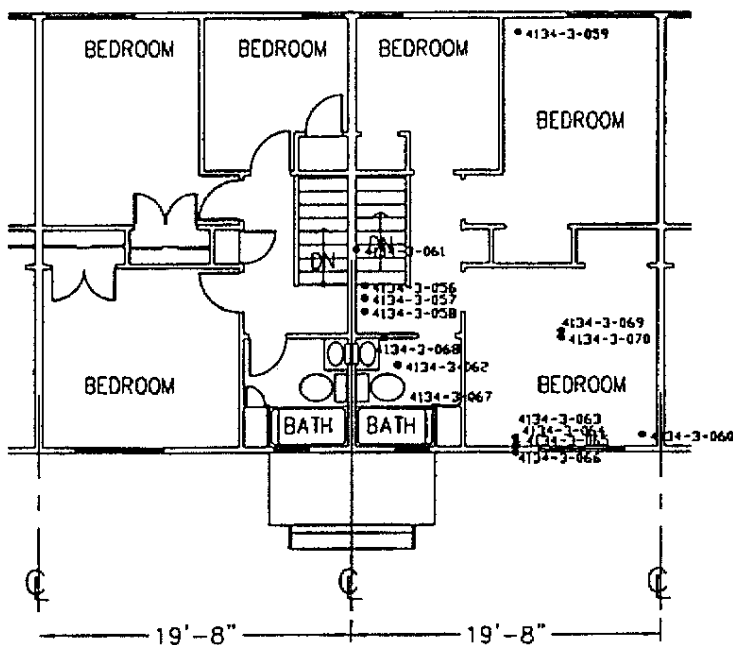
TYPICAL BUILDINGS 4129, 4130, 4133, 4134, 4139

FY01 REPLACEMENT
FAMILY HOUSING
FIGURE 4



EXISTING SECOND FLOOR PLAN

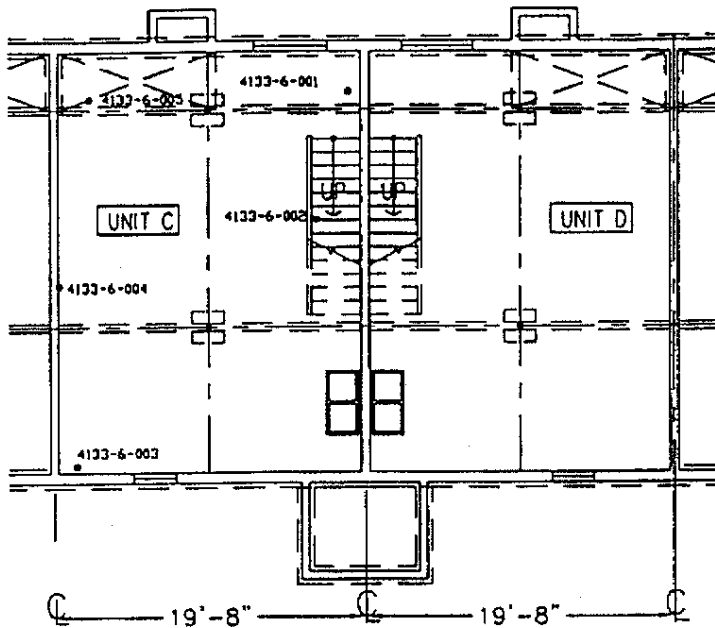
TYPICAL BUILDINGS 4129, 4130, 4133, 4134, 4139



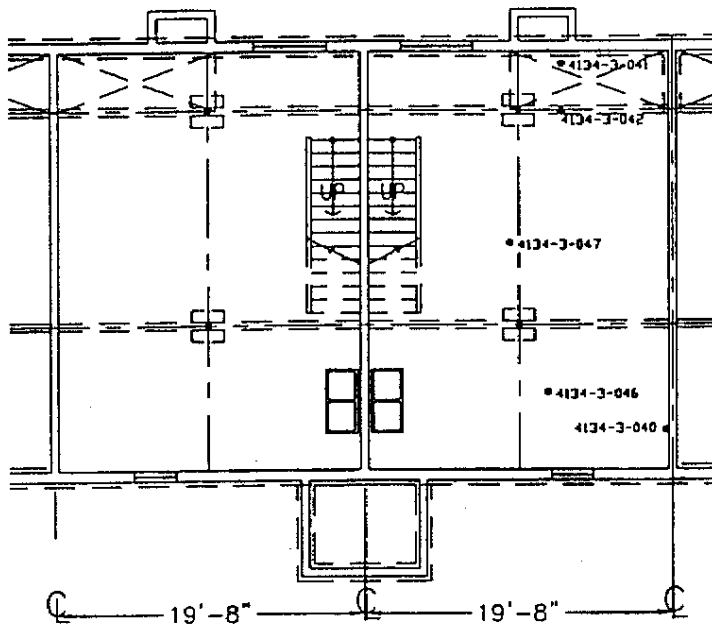
EXISTING SECOND FLOOR PLAN

TYPICAL BUILDINGS 4129, 4130, 4133, 4134, 4139

FY01 REPLACEMENT
FAMILY HOUSING
FIGURE 5

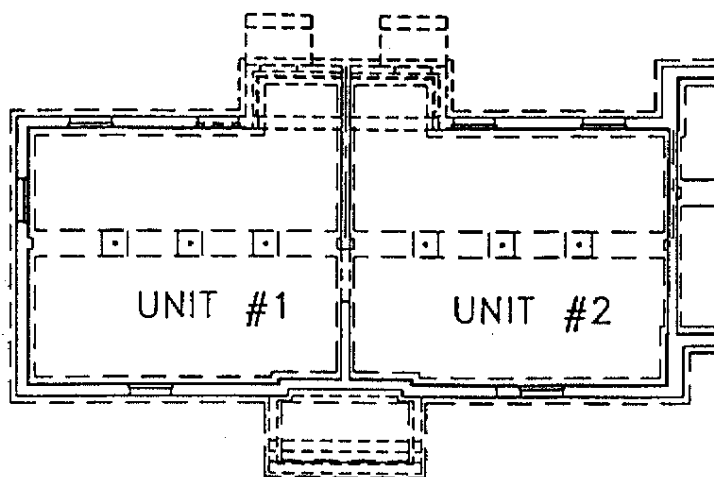


EXISTING BASEMENT FLOOR PLAN
TYPICAL BUILDINGS 4129, 4130, 4133, 4134, 4139



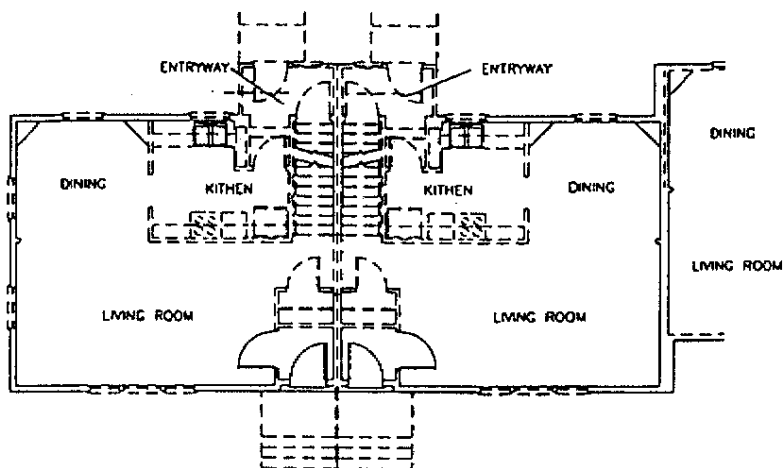
EXISTING BASEMENT FLOOR PLAN
TYPICAL BUILDINGS 4129, 4130, 4133, 4134, 4139

FY01 REPLACEMENT
FAMILY HOUSING
FIGURE 6



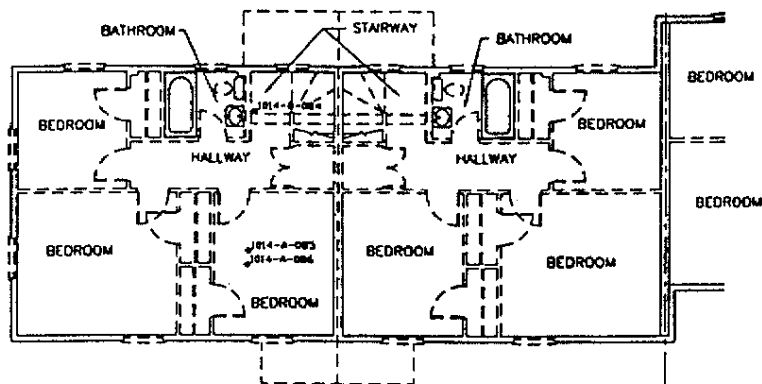
EXISTING BASEMENT FLOOR PLAN

BUILDINGS 1014, 1027, 1028, 1029, 1030, 1038, 1039
NOT TO SCALE



EXISTING FIRST FLOOR PLAN

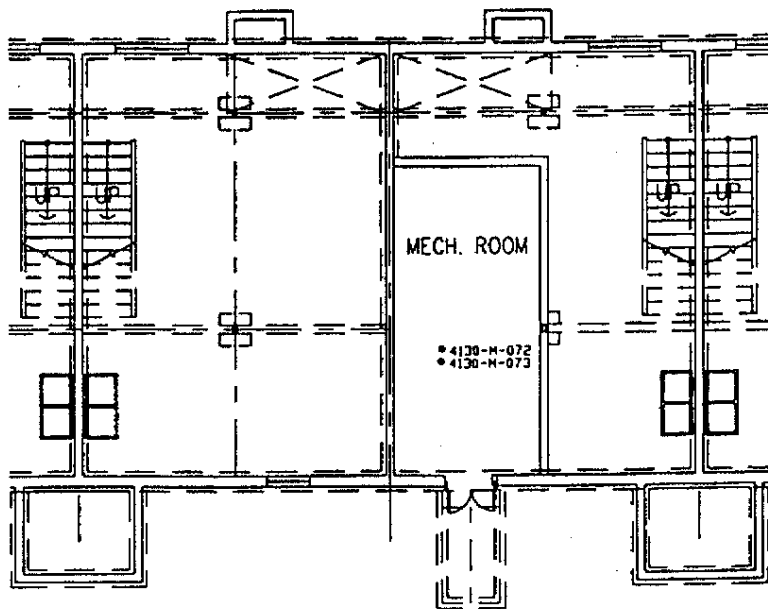
BUILDINGS 1014, 1027, 1028, 1029, 1030, 1038, 1039
NOT TO SCALE



EXISTING SECOND FLOOR PLAN

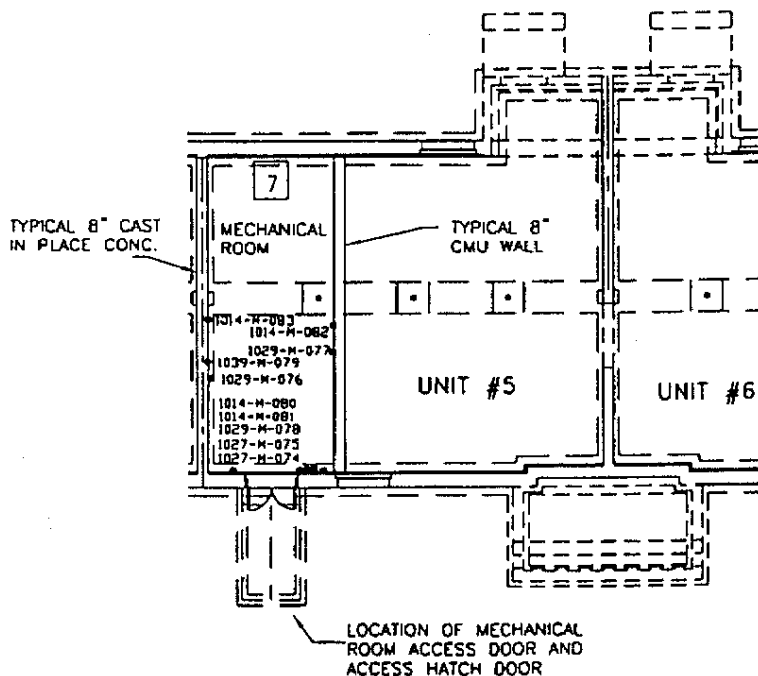
BUILDINGS 1014, 1027, 1028, 1029, 1030, 1038, 1039
NOT TO SCALE

FY01 REPLACEMENT
FAMILY HOUSING
FIGURE 7



TYPICAL MECH. ROOM

BUILDINGS 4129, 4130, 4133, 4134, 4139
NOT TO SCALE



TYPICAL MECH. ROOM

BUILDINGS 1014, 1027, 1028, 1029, 1030, 1038, 1039
NOT TO SCALE

APPENDIX A
Laboratory Data

**FY01 FAMILY HOUSING REPLACEMENT
FORT WAINWRIGHT, AK****SAMPLE NUMBER DESCRIPTION**

4133-6-001	Penetration sealant (basement) around electrical conduits (turquoise)
4133-6-002	Mastic- yellow from beneath black stair treads
4133-6-003	Mastic used to glue alum.backed fiberglass insulation between floor joists (at rim joist)
4133-6-004	Caulking Material at joint between wall and floor
4133-6-005	Gypsum Wallboard Material from soffited area (no joint compound)
4133-6-006	Mastic & Rubber Base typical kitchen, dining, rear entry
4133-6-007	Ceramic tile, grout, and mastic typ in kitchen
4133-6-008	Caulking Material from joint between kitchen counter and ceramic tile
4133-6-009	Vinyl flooring, mastic and wood
4133-6-010	Saturated felt paper- dining area subflooring
4133-6-011	Black mastic from paper backed fiberglass insul. (vapor Barrier)
4133-6-012	Gyp Board & Joint Compound- living room wall
4133-6-013	Gyp Board and Joint Compound- living room ceiling
4133-6-014	Rubber Base & Mastic from front entry
4133-6-015	Viny and mastic from front entry
4133-6-016	Mastic/paper (vapor Barrier) from living room subfloor
4133-6-017	Multi-layered Vapor Barrier from exterior wall
4133-6-018	mastic / fiber board from exterior wall
4133-6-019	Pink Paper from exterior wall
4133-6-020	Wood / Green Coating from exterior wall
4133-6-021	Rubber & Mastic from nose guard at top of stairs (beneath carpet)
4133-6-022	Saturated Felt & mastic w/wood 2nd floor beneath 9" x9" tile
4133-6-023	Floor Tile / Mastic 2nd floor
4133-6-024	Floor Tile / Mastic 2nd floor
4133-6-025	Floor Tile / Mastic 2nd floor
4133-6-026	Saturated Felt w/ Mastic 2nd floor
4133-6-027	Two Layers Vinyl, Mastic & Wood (bath)
4133-6-028	Multiple Layers of Mastic from rubber base (bath)
4133-6-029	Grout From Ceramic Tile (bath)
4133-6-030	Mastic from behind ceramic tiles (bath)
4133-6-031	Gypsum Wallboard and Joint Compound (bedroom wall)
4133-6-032	Gypsum Wallboard and Joint Compound (bedroom ceiling)
4133-6-033	Multilayered Vapor Barrier (2nd floor ceiling)
4133-6-034	Gypsum Wallboard and Joint Compound (inner layer-2nd floor ceiling)
4133-6-035	Sprayed on Texture & Paint (dining room)
NOT USED	NOT USED

**FY01 FAMILY HOUSING REPLACEMENT
 FORT WAINWRIGHT, AK**

SAMPLE NUMBER DESCRIPTION

4133-6-037	Sprayed on Texture & Paint (living room)
4133-6-038	Saturated Felt from exterior wall
4133-6-039	Fiberboard from beneath exterior metal siding
4134-3-040	Penetration sealant (basement) around electrical conduits (turquoise)
4134-3-041	Gypsum Wallboard from soffit (no joint compound)
4134-3-042	Mastic used to glue alum.backed fiberglass insulation between floor joists (at rim joist)
4134-3-043	Mastic from Rubber base kitchen area
4134-3-044	Cualk from Kitchen Area
4134-3-045	Ceramic Tile, Grout, Lv Cmpd & Mastic (kitchen)
4134-3-046	Saturated roofing felt kitchen subfloor
4134-3-047	Multilayered Vapor Barrier living room subfloor
4134-3-048	Vinyl, Mastic & Saturated Felt (dining room floor)
4134-3-049	Gypsum Wallboard and Joint Compound (living room wall)
4134-3-050	Gypsum Wallboard and Joint Compound (outer layer living room ceiling)
4134-3-051	Vinyl, mastic,tile,mastic, felt, wood (front entry)
4134-3-052	Mastic from Rubber Base (front entry)
4134-3-053	Multi Layered Vapor Barrier (exterior wall front entry)
4134-3-054	Fiber Board with Mastic (exterior wall front entry)
4134-3-055	Pink Paper (exterior wall front entry)
4134-3-056	Mastic from beneath noseguard (top of stairs)
4134-3-057	Tile with Mastic (2nd floor)
4134-3-058	Saturated Felt with Mastic (2nd floor)
4134-3-059	Floor Tile with Mastic (2nd floor)
4134-3-060	Floor Tile with Mastic (2nd floor)
4134-3-061	Gypsum Wallboard with Joint Compound (wall)
4134-3-062	Three Layers Vinyl, mastic & wood (bath)
4134-3-063	Multilayered Vapor Barrier from exterior wall
4134-3-064	Fiberboard w/ mastic from exterior wall
4134-3-065	Saturated roofing felt from exterior wall
4134-3-066	Fiberboard from beneath exterior metal siding
4134-3-067	Ceramic Tile, Grout & Mastic from bath
4134-3-068	Rubber Base with Multiple layers mastic from bath
4134-3-069	Multi Layered Vapor Barrier with mastic from 2nd floor ceiling
4134-3-070	Gypsum Wallboard with Joint Compound from inner layer 2nd floor ceiling
4134-3-071	Sprayed on Texture living room wall
4130-M-072	Unknown Mat'l from Piping (scale?)

**FY01 FAMILY HOUSING REPLACEMENT
FORT WAINWRIGHT, AK**

SAMPLE NUMBER DESCRIPTION

4130-M-073	Unknown Mat'l from Piping (scale?)
1027-M-074	Mastic - fiberboard to wall
1027-M-075	Mastic - fiberboard to fiberboard
1029-M-076	Pipe Penetration Sealant (red)
1029-M-077	Pipe Penetration Sealant (greenish-turquoise)
1029-M-078	Mastic & Fiber Board - fiberboard to wall
1039-M-079	Pipe Penetration Sealant (red)
1014-M-080	Mastic - fiberboard to fiberboard
1014-M-081	Mastic - fiberboard to wall
1014-M-082	Pipe Penetration Sealant (turquoise)
1014-M-083	Pipe Penetration Sealant (mortar type)
1014-8-084	Saturated Felt & Mastic from beneath carpet on stairs (no tile)
1014-A-085	Saturated Felt (old roof)
1014-A-086	Saturated Felt (new roof)
4133-A-087	Multi Layered Vapor Barrier immediately below built-up roofing
4133-A-088	Multi Layered Built up Roofing (old flat roof)
4133-A-089	Multi Layered Vapor Barrier immediately below built-up roofing
4133-A-090	Multi Layered Built up Roofing (old flat roof)
01FWHR4133	Mech Room Access (left) Bldg 4133 (soil sample)
01FWHR4134	Mech Room Access (left) Bldg 4134 (soil sample)
01FWHR4139	Mech Room Access (right) Bldg 4139 (soil sample)
01FWHR1027	Mech Room Access (right) Bldg 1027 (soil sample)
01FWHR1028	Mech Room Access (right) Bldg 1028 (soil sample)
01FWHR1029	Mech Room Access (right) Bldg 1029 (soil sample)
01FWHR1030	Mech Room Access (right) Bldg 1030 (soil sample)
01FWHR1038	Mech Room Access (right) Bldg 1038 (soil sample)
01FWHR1039	Mech Room Access (right) Bldg 1039 (soil sample)
01FWHR1014	Mech Room Access (right) Bldg 4133 (soil sample)
FTW230-01Bk	Floor Tile & Mastic (green) (basement) bldg 1039-1
FTW230-02BK	Floor Tile & Mastic (white) (basement) bldg 1039-1
FTW230-03BK	Gypsum Wallboard, Texture Paint (basement) 1039-7

NVL Laboratories, Inc.

4708 Aurora Ave. N., Seattle, WA 98103

Tel: 206.547.0100
Fax: 206.634.1936

NVLAP
#102063

Bulk Asbestos Fiber Analysis

Client: Laucks Testing Laboratories, Inc.
Address: 940 South Harney Street
Seattle, WA 98108
Attn: Mike Owens
Project: FHR04

NVL Batch Number: 21-01740.00

Client Project #: FHR04

Number of samples: 20

Lab ID #: 21030248 Client Sample #: 0102494-01

Sample Location: 4133-6-001
Description: Green sandy material

OTHER FIBROUS MATERIALS:

Cellulose 4%

ASBESTOS TYPE:

*None Detected

NON-FIBROUS MATERIALS:

Calcareous matrix, Sands, Perlite

PERCENT

ND

Lab ID #: 21030249 Client Sample #: 0102494-02

Sample Location: 4133-6-002
Description: Brown soft mastic with paint

OTHER FIBROUS MATERIALS:

Cellulose 3%

ASBESTOS TYPE:

*None Detected

NON-FIBROUS MATERIALS:

Mastic/binder, Paint

PERCENT

ND

Lab ID #: 21030250 Client Sample #: 0102494-03

Sample Location: 4133-6-003
Description: LAYER 1: Brown soft material LAYER 2: Brown fibrous material

OTHER FIBROUS MATERIALS:

LAYER 1: Cellulose 4%

LAYER 2: Glass fibers 75%

ASBESTOS TYPE:

LAYER 1: Chrysotile

LAYER 2: *None Detected

NON-FIBROUS MATERIALS:

LAYER 1: Calcareous matrix, Sands

LAYER 2: Fine particles

PERCENT

4%

ND

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Steve Zhang
Reviewed by: Nick Ly

Date: 03/03/2001

Date: 03/03/2001

Nick Ly, Technical Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA 600/R-93/116 Method with the following measurement uncertainties for the reported % Asbestos (1%=>0-3%, 5%=>1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Page 1

NVL Laboratories, Inc.

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NVLAP
#102063

Bulk Asbestos Fiber Analysis

Client: Laucks Testing Laboratories, Inc.
Address: 940 South Harney Street
Seattle, WA 98108
Attn.: Mike Owens
Project: FHR04

NVL Batch Number: 21-01740.00
Client Project #: FHR04
Number of samples: 20

Lab ID #: 21030251 Client Sample #: 0102494-04

Sample Location: 4133-6-004

Description: Brown soft mastic with trace sandy material

OTHER FIBROUS MATERIALS:

Cellulose 3%

NON-FIBROUS MATERIALS:

Mastic/binder, Sands

ASBESTOS TYPE:

*None Detected

PERCENT

ND

Lab ID #: 21030252 Client Sample #: 0102494-05

Sample Location: 4133-6-005

Description: Brown paper with white chalky material

OTHER FIBROUS MATERIALS:

Cellulose 45%

NON-FIBROUS MATERIALS:

Fine particles, Calcareous matrix

ASBESTOS TYPE:

*None Detected

PERCENT

ND

Lab ID #: 21030253 Client Sample #: 0102494-06

Sample Location: 4133-6-006

Description: LAYER 1: Grey rubbery material LAYER 2: Brown mastic

OTHER FIBROUS MATERIALS:

LAYER 1: *None Detected

LAYER 2: Cellulose 2%

NON-FIBROUS MATERIALS:

LAYER 1: Rubber/binder

LAYER 2: Mastic/binder

ASBESTOS TYPE:

LAYER 1: *None Detected

LAYER 2: *None Detected

PERCENT

ND

ND

(Sample results are continued on the next page.)

Sampled by: Client

Analyzed by: Steve Zhang

Reviewed by: Nick Ly

Date: 03/03/2001

Date: 03/03/2001

Nick Ly, Technical Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA 600/R-93/116 Method with the following measurement uncertainties for the reported % Asbestos (1%=>0.3%, 5%=>1.9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.

NVL Laboratories, Inc.

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NVLAP
#102063

Bulk Asbestos Fiber Analysis

Client: Laucks Testing Laboratories, Inc.
Address: 940 South Harney Street
Seattle, WA 98108
Attn.: Mike Owens
Project: FHR04

NVL Batch Number: 21-01740.00
Client Project #: FHR04
Number of samples: 20

Lab ID #: 21030254 Client Sample #: 0102494-07

Sample Location: 4133-6-007

Description: LAYER 1: Grey surfaced white ceramic LAYER 2: Brown mastic with white compacted powdery material and trace fibrous material

OTHER FIBROUS MATERIALS:

LAYER 1: *None Detected
LAYER 2: Cellulose 3%

NON-FIBROUS MATERIALS:

LAYER 1: Ceramic/binder
LAYER 2: Mastic/binder, Fine particles,
Calcareous matrix

ASBESTOS TYPE:	PERCENT
LAYER 1: *None Detected	ND
LAYER 2: *None Detected	ND

Lab ID #: 21030255 Client Sample #: 0102494-08

Sample Location: 4133-6-008

Description: Tan soft material with tan compacted powdery material

OTHER FIBROUS MATERIALS:

Cellulose 2%

NON-FIBROUS MATERIALS:

Calcareous matrix, Mastic/binder

ASBESTOS TYPE:	PERCENT
*None Detected	ND

Lab ID #: 21030256 Client Sample #: 0102494-09

Sample Location: 4133-6-009

Description: LAYER 1: Beige vinyl with brown streaks LAYER 2: Grey fibrous backing with mastic and wood debris

OTHER FIBROUS MATERIALS:

LAYER 1: *None Detected
LAYER 2: Cellulose 55%, Glass fibers 15%

NON-FIBROUS MATERIALS:

LAYER 1: Vinyl/binder
LAYER 2: Fine particles, Mastic/binder

ASBESTOS TYPE:	PERCENT
LAYER 1: *None Detected	ND

(Sample results are continued on the next page.)

Sampled by: Client
Analyzed by: Steve Zhang
Reviewed by: Nick Ly

Date: 03/03/2001
Date: 03/03/2001


Nick Ly, Technical Director

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using EPA 600/R-93/116 Method with the following measurement uncertainties for the reported % Asbestos (1%=>0-3%, 5%=>1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If samples were not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the U.S. Government.